MINE DEVELOPMENT ASSOCIATES
MINE ENGINEERING SERVICES

# Technical Report, Titan Project
# Ontario, Canada

*Prepared for*

Prophecy Development Corp.

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# 1.0 SUMMARY

## 1.1 Introduction

Prophecy Development Corp. ("Prophecy") requested that Mine Development Associates ("MDA") prepare a Technical Report including a mineral resource estimate and recommendations for future work on their Titan vanadium-iron-titanium property in Ontario, Canada. MDA had previously prepared a Technical Report on the property during 2006, which was updated in 2007, and again during January 2010 when Randsburg International Gold Corp. ("Randsburg") sold 80% of the property to Prophecy Resource Corp. (Prophecy). The Technical Reports completed in 2007 and 2010 are no longer valid for the project, as the requirements for the calculation of resources has been updated over time.

Prophecy Resource Corp. changed its name to Prophecy Development Corp. effective January 7, 2015. Prophecy purchased the remaining 20% of the Titan property that it did not own from Randsburg during January, 2017.

The Titan project is located in eastern Ontario, straddling the boundary between Angus and Flett townships. It is approximately 120 km east-northeast of Sudbury, Ontario. The Titan property consists of 263.6 contiguous hectares that include 17 patented claims of which Prophecy is 100% owner.

Although the mineralization associated with mafic and ultramafic complexes in this region was identified as early as the 1890s and the Titan occurrence was mapped in the 1930s, the Titan property has only had three periods of significant exploration. Titan Iron Mines Limited ("Titan Iron") conducted trenching, sampling, and drilling in the 1940s. Sampling and airborne and ground magnetic surveying were done in the 1960s. Between 2004 and 2010, Randsburg carried out airborne magnetometer and electromagnetic ("EM") surveying as well as drilling. Prophecy has completed a GPS survey of the claims, a mineralogical investigation of the iron, ilmenite, vanadium occurrence, and a geologic investigation of the property.

## 1.2 Geology and Mineralization

The Titan property is located in the Precambrian Grenville Province of the Canadian Shield. Country rocks are predominantly Mesoproterozoic granodiorite to monzogranitic gneisses that represent metamorphosed felsic intrusions. There are also less common exposures of layered mafic gneiss and biotite-hornblende diorite gneiss that appear to be older than the felsic gneisses. Two large, layered mafic to ultramafic complexes (Fall Lake and Fanny Lake complexes) that have been dated as 1238-1235 Ma intrude the gneisses.

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Magnetite, ilmenite, titanium dioxide, and vanadium mineralization at Titan occurs in a southeast-plunging body in gabbro to leucotroctolite in the northeastern corner of the Fall Lake complex. Titaniferous magnetite is intermingled with altered gabbro as a hydrothermal replacement and is also present as streaks, patches, veinlets, and lenses of solid magnetite ranging from less than a centimeter to a maximum of about 30 meters in width.

The Titan deposit is located at the northern end of an aeromagnetic anomaly that is 1,200 by 800 m in area.

## 1.3 Mineral Processing and Metallurgical Testing

Randsburg completed preliminary metallurgical testwork on material from one core hole at Altairnano's facilities in Reno, Nevada. Altairnano used a proprietary "Altair Hydrochloride Pigment Process" ("AHPP") dissolution test on the composites. This process uses hydrochloric acid and hydrochloride gas to dissolve iron, titanium and vanadium metals. The test concluded that 88% of the iron, 96% of the titanium and 80% of the vanadium could be dissolved after 4 hours using this process.

Altairnano then sent 5 kg of composite sample to Hazen Research in Golden, Colorado for wet magnetic testing, primarily to increase the grade of material for the AHPP process. Hazen obtained a high-grade concentrate by wet magnetic separation but the overall recovery was poor. Hazen suggested additional testing using magnetic separation, gravity and flotation. Altairnano concluded that additional testing is required at finer grind size in the 5-20-micron range.

Prophecy engaged Hazen Research to complete a mineralogical characterization from a 150 kg sample of the vanadium bearing magnetite-ilmenite material. The objective of the study was to determine whether the titanium occurs as a discrete phase, or as fine ilmenite or ulvöspinel lamellae, to establish if physical separation from the magnetite is viable. In general, the study showed that the titanium occurs as distinct granular ilmenite particles usually intergrown with the magnetite. The preliminary conclusion derived from the results is that an ilmenite concentrate could probably be produced by wet low-intensity magnetic separation. However, the strongly magnetic, i.e., magnetite, fraction will likely be high in titanium. This means that the recovery of titanium as ilmenite from the total titanium in the feed may be lower than normal.

Over the past 5 years or so, a number of vanadium, iron, and titanium properties have seen increased interest due mainly to the use of vanadium in energy storage batteries. As a result, new methods have been developed to recover vanadium, iron, and ilmenite from the deposits. Although most operating properties use magnetic separation of the magnetite from ilmenite, followed by roasting and leaching to produce a ferrovanadium product, some processes have been developed to leach and precipitate vanadium from an iron concentrate without roasting. Although considerable metallurgical testwork is required to evaluate the feasibility of the project, new processes should be considered in completing the testwork.

## 1.4 Mineral Resource Estimate

The mineral resources at the Titan project were estimated by determining statistical and geological criteria to aid in modeling of iron and titanium mineralized zones, interpreting iron and titanium mineralized zone polygons on east-west cross sections, rectifying mineral zone interpretations onto plan view zones. All modeling of the Titan project resources was performed using GEOVIA Surpac™ mining software.

Table 1.1 summarizes Randsburg's drilling on the property. A total of 4,898 assay intervals are contained in the database from 38 core holes drilled by Randsburg on the property. The drilling is approximately on a 50-meter grid. The drill hole coordinates were obtained by a handheld GPS with limited accuracy.

**Table 1.1 Randsburg Drilling Summary**

| Year | Holes | Meters |
|---|---|---|
| 2004 | 8 | 1,854.3 |
| 2005 | 22 | 6,595.0 |
| 2006 | 8 | 1,858.0 |
| **Totals** | **38** | **10,307.3** |

MDA collected three surface samples and three half-core samples from drill hole RA-04-06 (163.85 to 165.85). These samples were given to Kappes, Cassiday and Associates ("KCA") for density testing by coating the samples in wax and weighing the dry samples and determining the volume by water displacement (ASTM Method C914-95). The average density obtained for the six samples was 4.29 and density did not vary as much as expected.

Only inferred resources can be calculated for the project since the drill holes have not been properly surveyed and the metallurgical testing for recovery using conventional processes needs additional work. MDA plotted east/west cross sections on 50 m intervals with iron and titanium values with geology plotted on one side. The geologic unit logged as magnetite olivine gabbro contained most of the material in the highest-grade population, or above 40% $Fe_2O_3$ and 12% $TiO_2$. Mineralized zones were drawn on the cross sections using an approximate 40% $Fe_2O_3$ cutoff grade. The mineralized zones were digitized and assay intervals within the mineralized zones were coded. The sectional mineralized zones were transferred to plan view zones on 10 m intervals.

Grades for $Fe_2O_3$, $TiO_2$, and V were interpolated by ordinary kriging into blocks from 10 m composites from mineralized zones. These kriged block grades were compared to grades estimated by inverse distance methods and were essentially the same globally. A minimum of one composite and a maximum of nine composites were used to interpolate grades. The material above a 40% $Fe_2O_3$ cutoff grade and within the variogram range of 108 m from a composite is shown in Table 1.2.

## Table 1.2 Titan Material above a 40% $Fe_2O_3$ Cutoff Grade

| Elevation | Tonnes (000"s) | % $Fe_2O_3$ | % $TiO_2$ | % V |
|---|---|---|---|---|
| -220 | 17.7 | 53.50 | 17.00 | 0.26 |
| -210 | 53.6 | 54.10 | 17.21 | 0.26 |
| -200 | 64.9 | 51.50 | 16.25 | 0.25 |
| -190 | 89.0 | 46.50 | 14.46 | 0.23 |
| -180 | 146.4 | 46.45 | 14.49 | 0.23 |
| -170 | 216.1 | 45.89 | 14.23 | 0.23 |
| -160 | 277.2 | 45.88 | 14.11 | 0.22 |
| -150 | 350.2 | 46.13 | 14.25 | 0.23 |
| -140 | 423.6 | 45.97 | 14.21 | 0.23 |
| -130 | 479.9 | 44.91 | 13.78 | 0.22 |
| -120 | 534.6 | 43.24 | 13.19 | 0.22 |
| -110 | 564.1 | 44.67 | 13.82 | 0.22 |
| -100 | 566.3 | 47.54 | 14.84 | 0.24 |
| -90 | 557.7 | 48.39 | 15.05 | 0.24 |
| -80 | 544.3 | 48.31 | 14.86 | 0.23 |
| -70 | 508.4 | 48.17 | 14.77 | 0.24 |
| -60 | 499.2 | 48.49 | 15.00 | 0.24 |
| -50 | 536.3 | 48.85 | 15.25 | 0.24 |
| -40 | 575.4 | 49.36 | 15.47 | 0.25 |
| -30 | 632.8 | 50.20 | 15.79 | 0.25 |
| -20 | 623.7 | 51.00 | 16.18 | 0.25 |
| -10 | 570.0 | 52.40 | 16.89 | 0.26 |
| 0 | 563.6 | 52.80 | 17.09 | 0.26 |
| 10 | 638.7 | 51.24 | 16.37 | 0.25 |
| 20 | 840.3 | 50.80 | 16.06 | 0.25 |
| 30 | 1,004.4 | 49.86 | 15.53 | 0.25 |
| 40 | 1,147.6 | 48.47 | 14.84 | 0.23 |
| 50 | 1,279.5 | 47.80 | 14.48 | 0.23 |
| 60 | 1,346.5 | 48.16 | 14.66 | 0.24 |
| 70 | 1,366.9 | 48.57 | 14.90 | 0.24 |
| 80 | 1,357.2 | 48.75 | 15.00 | 0.25 |
| 90 | 1,392.1 | 50.34 | 15.67 | 0.26 |
| 100 | 1,429.1 | 50.53 | 15.68 | 0.26 |
| 110 | 1,415.2 | 50.07 | 15.44 | 0.25 |
| 120 | 1,422.7 | 49.61 | 15.31 | 0.25 |
| 130 | 1,485.9 | 47.04 | 14.27 | 0.23 |
| 140 | 1,484.3 | 46.40 | 13.93 | 0.22 |
| 150 | 1,366.4 | 47.49 | 14.41 | 0.24 |
| 160 | 1,219.4 | 48.18 | 14.71 | 0.24 |
| 170 | 1,090.7 | 49.24 | 15.09 | 0.25 |
| 180 | 1,038.2 | 49.62 | 15.29 | 0.25 |
| 190 | 1,163.1 | 49.03 | 15.08 | 0.25 |
| 200 | 1,361.0 | 47.83 | 14.63 | 0.24 |
| 210 | 1,341.7 | 47.13 | 14.42 | 0.23 |
| 220 | 1,221.6 | 47.22 | 14.47 | 0.23 |
| 230 | 1,297.7 | 47.00 | 14.37 | 0.23 |
| 240 | 1,434.5 | 46.72 | 14.22 | 0.23 |
| 250 | 1,483.8 | 46.98 | 14.37 | 0.23 |
| 260 | 1,550.3 | 47.26 | 14.52 | 0.23 |
| 270 | 1,391.6 | 47.76 | 14.78 | 0.24 |
| 280 | 1,351.9 | 46.89 | 14.44 | 0.23 |
| 290 | 1,577.6 | 45.83 | 13.96 | 0.23 |
| 300 | 1,450.0 | 46.18 | 14.11 | 0.23 |
| 310 | 638.1 | 46.42 | 14.16 | 0.24 |
| **Totals** | **48,983.2** | **48.09** | **14.82** | **0.24** |

An equivalent vanadium grade was used to optimize a pit. The commodity prices and recoveries used to determine the equivalent vanadium relationship to calculate the material inside an optimized pit is shown in Table 1.3. Note that all dollars are in $U.S. unless otherwise noted.

**Table 1.3 Equivalent Vanadium Calculation**

| Material | Price $/22.046 lbs | Basis | Concentrate Grade | Recovery | Recovered Value | Equivalent V |
|---|---|---|---|---|---|---|
| V | $176.37 | $ 8/lb V | | 75.0% | $132.28 | 1 |
| FeO2 | $1.56 | $100/t $Fe_2O_3$ | 64% $Fe_2O_3$ | 65.0% | $1.02 | 0.0077 |
| TiO2 | $3.70 | $200/t $TiO_2$ | 54% $TiO_2$ | 65.0% | $2.41 | 0.0182 |

The following parameters were used to determine material inside an optimized pit:

- 40% $Fe_2O_3$ Cutoff Grade
- 50-degree pit slope
- Material processed density 4.29 tonnes/cu meter; Waste density 3.00 tonnes/cu meter
- Mining cost $2.10 per tonne mined
- Processing cost $50 per tonne processed
- G & A cost $2.00 per tonne processed
- Price of $8/lb ($17.6/kg) vanadium recovered

Based on the parameters used for pit optimization, the pits shown in Table 1.4 were obtained.

**Table 1.4 Pit Optimization Results**

| Pit | Vanadium Price $/lb V | Total Tonnes 000's | Waste Tonnes 000's | "Ore" Tonnes 000's | Strip Ratio t waste/t ore | Max Bench | Min Bench | $Fe_2O_3$ Units 000's | $Fe_2O_3$ Grade % | $TIO_2$ Units 000's | TIO2 Grade % | V Units 000's | V Grade % | EQ V Grade % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | $3.68 | 1,407.4 | 497.9 | 909.5 | 0.55 | 58 | 52 | 46,767.7 | 51.42 | 14,791.3 | 16.26 | 221.0 | 0.24 | 0.92 |
| 3 | $4.00 | 25,074.1 | 12,015.4 | 13,058.8 | 0.92 | 59 | 38 | 634,503.0 | 48.59 | 195,576.1 | 14.98 | 3,151.3 | 0.24 | 0.88 |
| 4 | $4.16 | 50,571.9 | 29,412.6 | 21,159.4 | 1.39 | 59 | 33 | 1,027,174.5 | 48.55 | 316,240.7 | 14.95 | 5,117.1 | 0.24 | 0.88 |
| 6 | $4.48 | 70,631.6 | 44,211.6 | 26,420.0 | 1.67 | 59 | 29 | 1,273,862.3 | 48.22 | 391,729.2 | 14.83 | 6,333.5 | 0.24 | 0.87 |
| 9 | $4.96 | 159,652.8 | 120,777.9 | 38,874.9 | 3.11 | 59 | 20 | 1,874,513.0 | 48.22 | 576,634.9 | 14.83 | 9,305.1 | 0.24 | 0.87 |
| 13 | $5.60 | 209,237.5 | 166,294.6 | 42,942.9 | 3.87 | 59 | 14 | 2,075,481.5 | 48.33 | 639,146.0 | 14.88 | 10,305.7 | 0.24 | 0.87 |
| 16 | $6.08 | 227,140.4 | 183,036.0 | 44,104.4 | 4.15 | 59 | 13 | 2,132,120.8 | 48.34 | 656,624.0 | 14.89 | 10,590.2 | 0.24 | 0.87 |
| 22 | $7.04 | 241,787.9 | 196,957.4 | 44,830.5 | 4.39 | 59 | 12 | 2,167,062.0 | 48.34 | 667,400.0 | 14.89 | 10,765.8 | 0.24 | 0.87 |
| **28** | **$8.00** | **272,111.5** | **226,115.2** | **45,996.3** | **4.92** | **59** | **10** | **2,222,403.9** | **48.32** | **684,589.1** | **14.88** | **11,042.1** | **0.24** | 0.87 |
| 34 | $9.12 | 299,812.2 | 252,898.9 | 46,913.3 | 5.39 | 59 | 9 | 2,264,066.5 | 48.26 | 697,416.6 | 14.87 | 11,251.2 | 0.24 | 0.87 |
| 40 | $10.08 | 320,630.0 | 273,125.8 | 47,504.2 | 5.75 | 59 | 8 | 2,290,447.5 | 48.22 | 705,478.7 | 14.85 | 11,383.7 | 0.24 | 0.87 |
| 51 | $12.00 | 353,443.6 | 305,162.8 | 48,280.7 | 6.32 | 59 | 7 | 2,324,216.6 | 48.14 | 715,739.5 | 14.83 | 11,549.8 | 0.24 | 0.87 |
| 64 | $16.00 | 370,453.4 | 321,879.9 | 48,573.5 | 6.63 | 59 | 7 | 2,337,066.8 | 48.11 | 719,648.5 | 14.82 | 11,612.7 | 0.24 | 0.87 |

The deposit resources based on the grade model at a 40% $Fe_2O_3$ cutoff grade and the results of pit optimization based on the parameters shown above is tabulated in Table 1.5.

**Table 1.5 Titan Resource Summary**

| Tonnes 000's | % $Fe_2O_3$ | % $TiO_2$ | % V |
|---|---|---|---|
| 45,996.3 | 48.32 | 14.88 | 0.24 |

## 1.5 Conclusions and Recommendations

MDA believes that the next phase of work should concentrate on the metallurgy of the deposit, with additional surface drilling in open areas of the deposit. It is very important to complete a survey of the project area and drill holes. If the already drilled holes cannot be located advanced studies that require measured and indicated materials may require re-drilling of the original holes. Metallurgical testing utilizing new technology and conventional technology should be completed. The metallurgical program should be designed by an independent metallurgist after reviewing the data, and should be made up of composites that are representative of the deposit. The past drill holes and project area should be surveyed to obtain more accurate drill hole coordinates and site topography. A surface geologic map should be completed utilizing methods to clear the soil and till to expose the surface geology where required. This work should lead to a preliminary assessment of the project.

The following tasks to complete the assessment are estimated and recommended:

| | |
|---|---|
| ▪ Metallurgist Review: | $ 20,000 |
| ▪ Metallurgical Testing | $ 150,000 |
| ▪ Market Study | $ 15,000 |
| ▪ Magnetometer Survey | $ 30,000 |
| ▪ Drill Hole and Topographic Survey | $ 30,000 |
| ▪ Surface Geologic Mapping | $ 45,000 |
| ▪ Surface Drilling | $ 750,000 |
| ▪ Preliminary Assessment | $ 60,000 |
| ▪ **Totals** | **$ 1,100,000** |

# 2.0 INTRODUCTION AND TERMS OF REFERENCE

## 2.1 Introduction

Prophecy Development Corp. ("Prophecy") engaged Mine Development Associates ("MDA") to provide a report summarizing the general setting, geology, project history, historic exploration activities and results, historic estimates of mineral resources, methodology, quality assurance, interpretations, metallurgy, mineral resource estimate, and recommendations for further work on its Titan iron-titanium-vanadium property in eastern Ontario.

The work done for this job entailed review of published and unpublished reports of previous work conducted on the property to the extent available as described below, including a database of drill holes and assays of drill samples. The work culminated in the preparation of this Technical Report as defined in NI 43-101 and in compliance with disclosure and reporting requirements set forth in the Canadian Venture Exchange ("CDNX") Corporate Finance Manual, National Instrument 43-101, and Companion Policy 43-101CP, and Form 43-101F1. The original Technical Report by MDA on the property was prepared by Neil Prenn, P. Eng., of MDA, who visited the Titan property on September 28, 2006. This updated report is based on a site visit by Neil Pettigrew P. Geo. on October 13, 2017, and the original site visit by Neil Prenn. This Technical Report was prepared in October, 2017 to update prior Technical reports on the property. The effective date of this report is October 23, 2017.

The purpose of this report is to provide Prophecy a summary of the Titan project, an independent opinion as to the technical merits of the project, a mineral resource estimate, and a guide to further exploration through recommendations and a budget. It is intended that this report may be submitted to those Canadian stock exchanges and regulatory agencies that may require it. This is a technical report, and the use of some technical terms is unavoidable.

## 2.2 Terms of Reference

This report draws on information provided in other geological and technical reports listed in the References section of this report. The writers have carefully reviewed all of the information provided by Prophecy and believes the information to be reliable.

## 2.3 Definitions

Frequently used acronyms and abbreviations.

**Currency** Unless otherwise indicated, all references to dollars ($) in this report refer to currency of the United States

| | |
|---|---|
| AA | atomic absorption spectrometry |
| Ag | silver |
| Au | gold |
| Cu | copper |
| dst | dry short tons |

| | |
|---|---|
| Fe | iron |
| $Fe_2O_3$ | iron oxide |
| ft | feet |
| gpm | gallons per minute |
| g/t | grams per tonne |
| HP | horsepower |
| in. | inches |
| km | kilometer |
| lb | pound (2000 lbs to 1 ton, 2204.6 lbs to 1 tonne) |
| m | meters |
| mph | miles per hour |
| oz | troy ounce (12 oz to 1 pound) |
| RC | reverse circulation drilling method |
| st | short (imperial) ton |
| $TiO_2$ | titanium dioxide |
| ton | short (imperial) ton |
| tonne | metric ton |
| tpd | (short) tons per day |
| tph stph | (short) tons per hour |
| V | vanadium |

## 2.4 Details of the Personal Inspection on the Property

The second author Neil Pettigrew, M.Sc., P.Geo., visited the Titan drill core and property on October 13th 2017. The Titan drill core, which consists solely of Ransburg's 2004-2006 drill programs, is currently stored in Temagami First Nations storage yard, located, ~6 kilometers south of the town of Temagami on highway 11. A total of 5 check samples were collected from the Randsburg drill core, which are fairly close to the original assays as shown in section 12. The Titan property was also visited, several old overgrown drill pads were observed as well as several magnetite-mineralized gabbroic outcrops, from which 2 samples were collected for analysis. Assay results are shown in section 12. Assays certificates for all check samples are included in Appendix B

## 3.0 RELIANCE ON OTHER EXPERTS

MDA has not personally reviewed the land tenure or environmental issues, are not Qualified Persons with regard to land tenure or environmental issues, and have not independently verified the legal status or ownership of the property, lease agreements, or environmental issues.

The authors have fully relied on information provided by Prophecy as to the current legal title of the mining concessions comprising the Titan project, the terms of property agreements, the existence of applicable royalty obligations, and information concerning environmental issues and permitting.

# 4.0 PROPERTY DESCRIPTION AND LOCATION

## 4.1 Location

The Titan project is located in Angus and Flett townships, Ontario, approximately 120 km east-northeast of Sudbury, Ontario, and approximately 50 km north of the city of North Bay (NTS 31L and 14) (Figure 4.1). The center of the mineralization at Titan is at approximate UTM coordinates of 615000E and 5190200N in zone 17 (NAD 83dataum). The approximate geographic coordinates of the property are 46º 50' North latitude and 79º 30' West longitude. The Titan vanadium-iron-titanium occurrence on the property has also been referred to in the literature as the O'Connor occurrence.

## 4.2 Land Area and Mining Property Description

The Titan property consists of 263.62 contiguous hectares (651.42 acres) that include 17 patented claims in the Angus and Flett Townships (Figure 4.2) (Appendix A). The Titan deposit is located on patented claims, which are patented both as to surface and mineral rights. Title to these patented claims is valid in perpetuity upon annual payment of a nominal acreage tax. Annual assessment work is required to continue to hold the unpatented claims. Three of the six original unpatented claims noted in the 2007 Technical Report were dropped in the period between 2007 and 2010. The remaining three unpatented claims were dropped in January, 2017.

Prophecy purchased 80% of the interest in the property in an agreement with Randsburg dated January 14, 2010. The agreement calls for Prophecy to make payments totaling $500,000 to Randsburg by January 1, 2011 to complete the 80% purchase of the property.

Prophecy purchased Randsburg's remaining 20% interest in Titan property for 20,000 Prophecy shares during January, 2017, to become the 100% owner of the property.

Annual taxes on the patented claims are about $1050 Canadian.

## 4.3 Agreements and Encumbrances

The 17 patented claims were purchased by Randsburg from Northoka Holdings Limited ("Northoka") through an agreement dated February 24, 2004. MDA has reviewed a copy of this agreement. As part of the purchase agreement, Northoka retained a Net Smelter Return Royalty in the amount of three percent (3%). Randsburg can purchase the Royalty for $1,500,000 Canadian.

The three unpatented claims staked by Randsburg in 2004, were dropped by Prophecy in January 2017.

The agreement between Prophecy and Randsburg for Prophecy to purchase 80% of the property was completed on January 14, 2010. The remaining 20% interest was purchased by Prophecy from Randsburg in January, 2017.

## 4.4 Environmental Liability

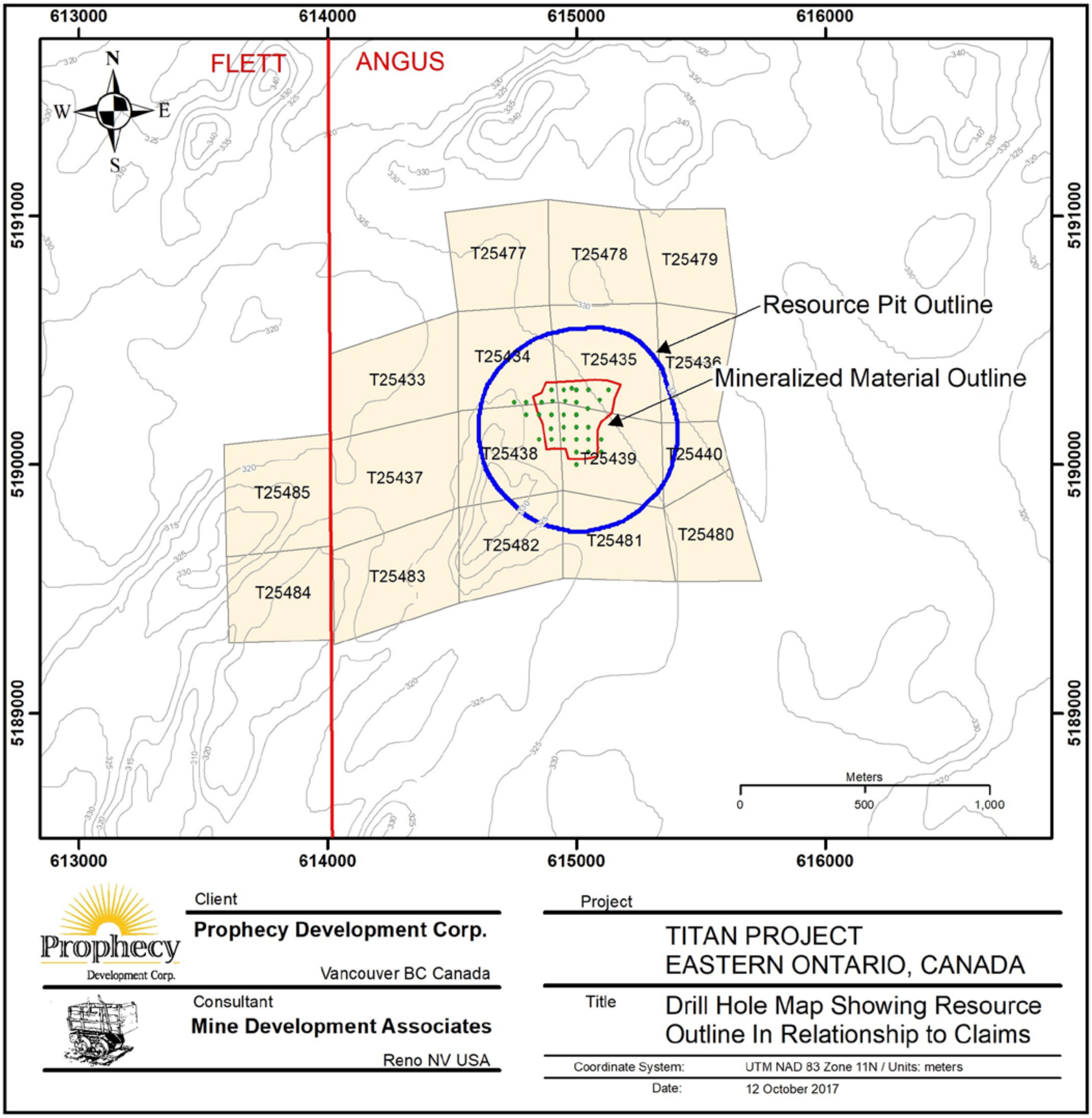
According to Docherty and Germundson (2006), the Titan property is within five kilometers of lakes used for recreational fishing. MDA is not aware of any environmental liabilities on the property. The deposit is exposed at the surface or covered with only one to three meters of soil and gravel derived from the deposit.

## 4.5 Permitting Requirements

To develop the property Prophecy must follow the federal and provincial permitting requirements and regulations. Exploration involving drilling will require permit(s) to complete the drilling.

**Figure 4.1 Location of the Titan Project**

**Figure 4.2 Claims of the Titan Property with Location of Inferred Resource**



# 5.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

## 5.1 Access

Access to the Titan property is via Highway 11 south from Temangami for 20 km to Gramps Place, then east on the Rabbit Lake Road for 18 km, then south on a bush trail that is accessible with 4x4 vehicles in the summer for 8 km to a parking area. From the parking area, the remaining 16 km of bush trail can be accessed in the summer with all-terrain vehicles or tracked vehicles and in the winter with a 4x4 vehicle or snow equipment.

## 5.2 Climate

According to Docherty and Germundson (2006), winter temperatures are commonly -15º to -25º C but can be as low as -40º C with snow accumulations from November into April and occasionally into early May. Summer temperatures can exceed 30º C briefly, accompanied by high humidity.

## 5.3 Local Resources and Infrastructure

The city of North Bay, Ontario, lies approximately 50 km south of the property and can provide lodging, supplies, and labor. The 2001 population of North Bay was 52,771. Transportation access to Titan includes the main line of the Ontario Northland Railway, which crosses the property; the mineralized area is about five miles northeast of Bushnell, a flag station on the railroad. Highway 11, a main provincial highway which links northern and southern Ontario, is 18 km west of Titan.

A major high voltage transmission line (about 230-kv) lies one to two miles east of the property and the Northern Ontario Natural Gas pipeline lies 15 miles west of the property (Bayne, 1967b).

## 5.4 Physiography

The property is characterized by the gently rolling topography of a dissected plateau with less than 100 m of relief. Several lakes are present, surrounded by marshy areas. Fall Lake, located south of the property, is 300 m above sea level. Vegetation is northern boreal, with both hard and softwood forest and abundant white pine. There are minor stands of timber and abundant scrub brush. The Fall Lake intrusion is topographically higher than the country rocks and is characterized by a distinctive fern-alder-birch flora (Easton, 2002). Within the patented claims there are few minor stands of timber and abundant scrub vegetation.

## 6.0 HISTORY

The following information on past activity is largely taken from Docherty and Germundson (2006).

Titaniferous magnetite mineralization associated with the mafic and ultramafic rocks of this part of Ontario was identified as early as the 1890s and mapped in the 1930s. Hurst (1932) mapped and described what is now the Titan magnetite occurrence but was then called the O'Connor occurrence, noting that the deposit had not been developed because of a lack of demand for iron ore containing titanium. From the 1930s through the early 1970s, there was exploration in the region seeking iron and titanium.

Exploration activity specifically directed at what is now the Titan property dates from 1942 when Titan Iron Mines Limited ("Titan Iron") conducted trenching, surface pitting, and sampling. However, at that time the presence of titanium was a detriment to the potential value of the iron mineralization. In 1947 Titan Iron refurbished and extended the old trenches and drilled 11 diamond drill core holes. In 1948 120 samples collected from the trenches were analyzed for titanium and iron by the Ontario Department of Mines and Swastika Laboratories. By 1953 Titan Iron had ceased exploration on the property, although tax payments were made to maintain the property in good standing. In that same year, samples were submitted to the Cranmet Corporation in Chicago for analysis with the conclusion that the ore is mainly a mixture of magnetite and ilmenite with only about 5% as spinel-type intergrowths of magnetite and ilmenite, which seemed favorable for separation (Bayne, 1967b).

The property was sampled by Watts, Griffiths and McOuat Ltd. for Southfield Mines Limited in 1964 (Docherty and Germundson, 2006; Bayne, 1967b). In 1966, Lockwood Survey Corporation Ltd. ("Lockwood") flew an airborne magnetic survey over the area for Titan Iron. A. S. Bayne prepared a report in 1967 to use in seeking capital to develop the Titan property. Lake Ontario Steel Company Ltd. optioned the property from Titan Iron in July, 1968, and conducted a ground magnetic survey (Mead, 1969).

Between 1973 and 1996, Flett and northwestern Angus townships were among a number of townships withdrawn from mineral staking and exploration activities due to the Temagami Land Caution. However, according to Easton (2002), Candol Developments Ltd. undertook a bulk sampling program that included the O'Connor magnetite occurrence (now Titan) in 1988; no results were available to MDA.

In 2004, Randsburg acquired the Titan property. They have conducted airborne magnetometer and electromagnetic ("EM") surveys over mafic/ultramafic complexes in Flett and Angus townships and ave drilled at Titan. In 2010 Prophecy purchased an 80% interest in the property, and in January, 2017 purchased the remaining 20% interest from Randsburg. No production has been recorded from the property.

## 6.1 Historic Resource Estimates

Early resource estimates pre-dated the criteria of NI 43-101. In 2006, MDA estimated a then NI 43-101 compliant resource to contain 49.0 million tonnes of material grading 48.09% $Fe_2O_3$, 14.82% $TiO_2$, and 0.24% V. The 2006 estimate is no longer considered current as it is an open pit resource that is not contained within an open pit.

# 7.0 GEOLOGIC SETTING AND MINERALIZATION

The following description of the regional and property geology is largely taken from Easton (2001, 2002), Docherty and Germundson (2006) and Germundson (2010).

## 7.1 Regional Geology

The Titan property is located in the Grenville Province of the Canadian Shield, just east of the Grenville Front (Figure 7.1). The Grenville Front is made up of a series of faults separating the Archean and Paleoproterozoic rocks of the Superior and Southern provinces on the northwest from the Archean and Mesoproterozoic rocks of the Grenville Province to the southeast. Immediately southeast of the Grenville Front is the Grenville Front tectonic zone, which consists of Archean rocks that were reworked during the Grenville Orogeny. Southeast of the Grenville Front tectonic zone is the Tomiko sub-province of the Grenville Province made up of Archean and Mesoproterozoic rocks. The Titan property lies in the Tomiko sub-province just east of the Grenville Front tectonic zone.

The country rocks of the Tomiko sub-province along the boundary between Flett and Angus townships are dominated by Mesoproterozoic felsic intrusions represented by granodiorite to monzogranitic gneiss. These gneisses appear to be younger than layered mafic gneiss exposed east and south of the Fall Lake intrusion, to be discussed shortly, and also younger than biotite-hornblende diorite gneiss.

Two large, layered mafic to ultramafic complexes intrude the gneisses of the Tomiko sub-province – the Fall Lake and Fanny Lake complexes. When these complexes were mapped in 1931 (Hurst, 1932), they were thought to be a single diabase mass. The Fall Lake intrusion straddles the boundary between Flett and Angus townships, while the larger Fanny Lake complex lies to the west in Flett Township. Anorthosite, troctolite, feldspathic dunite, and ultramafic rocks make up these complexes. Both intrusions are slightly alkalic in composition (Easton, 2002). Leucotroctolite from the northeast part of the Fall Lake intrusion yielded a $^{207}Pb/^{206}Pb$ age of 1235$\pm$2 Ma, while leucotroctolite from north-central Fanny Lake in the Fanny Lake intrusion yielded an age of 1238$\pm$2 Ma (Easton, 2002). These slightly different ages are consistent with field observations that suggest the Fanny Lake intrusion experienced greater metamorphism than the Fall Lake intrusion. These ages also suggest that the Fall Lake and Fanny Lake intrusions are similar in age to the Sudbury diabase dike swarm but are younger than the East Bull Lake intrusion near Sudbury which contains significant amounts of platinum group metals and was emplaced 2475 Ma (Easton, 2002).

## 7.2 Property Geology

The Falls Lake intrusions strikes toward the northeast, which is parallel to the regional foliation. The intrusion is close to 3 kilometres in length and maintains an average width of 750 meters, but narrows toward the northeastern end where the Titan deposit is located (Germundson 2010). Magnetite and titanium dioxide mineralization in the Titan deposit is hosted by gabbro to leucotroctolite (p.c. Germundson). The southwestern portion of the Fall Lake intrusion, southwest of the Titan property, is made up of a variety of lithologies, but gabbro predominates. The northeastern portion of the intrusion is made up of leucocratic olivine gabbro to leucotroctolite. The leucocratic olivine gabbro to leucotroctolite appears to be fresh in thin section with little evidence of metamorphism. Contacts of the intrusion with mafic gneiss and granite gneiss, thought to be older than the Fall Lake complex, are poorly exposed.

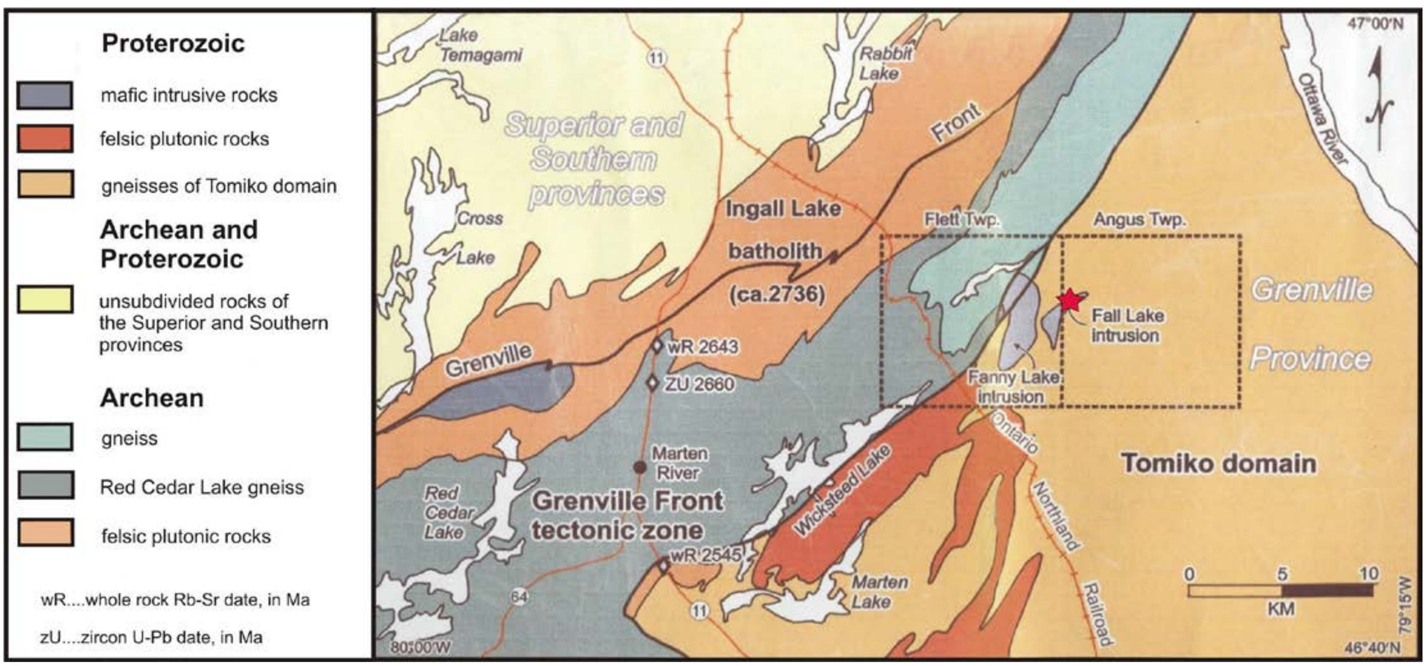
The gabbro to leucotroctolite is almost black, coarse grained, and composed of a dark-colored feldspar, pyroxene, and lesser amounts of magnetite (Ginn, 1947). The granite gneiss country rock is medium grained and pink with quartz, pink feldspar, and accessory biotite (Ginn, 1947).

While the host rocks of the Fall Lake Intrusion are apparently of the same composition as the country rock, the mineralized units are altered and finer grained.

Both the northwest and the southeast contacts of the Fall Lake intrusion are displaced by en echelon faulting that apparently acted at right angles to the contacts with a maximum offset of ~200 meters .The Fall Lake intrusion is also bisected longitudinally by faulting as evidenced by the linear drainage pattern, mafic gneiss and schist exposures and other evidence of shearing (Germundson 2010)

Pleistocene and Recent gravel, sand, clay, and muskeg cover part of the deposit but to shallow depths.

**Figure 7.1 Geology of the Titan Property**



## 7.3 Mineralization

The following information is largely taken from Germundson (2010), Docherty and Germundson (2006) and Easton (2002).

The Mineralization at the Titan deposit consists of hydrothermal replacement (metasomatism) by titaniferous magnetite and ilmenite which resulted in varying degrees, from minor to near total digestion of the host rocks (Germundson 2010).

Magnetite, ilmenite, and titanium dioxide are found within the Fall Lake mafic-ultramafic complex at Titan. Titaniferous magnetite formed as a hydrothermal replacement of fine-grained olivine gabbro with magnetite and titanium minerals comprising up to 90% or more of the volume over two- to four-m wide core intersections. Magnetite and altered gabbro are intermingled, although there are also streaks, patches and veinlets of solid magnetite. The ore is composed largely of plagioclase feldspar and granular magnetite with ilmenite, intergrown with a titanium mineral that is probably ulvoespinel (Owens, 1968). Also present are olivine, pyroxene, and hercynite; minor hematite, goethite, anatase (?), chalcopyrite, pyrite, pyrrhotite, talc, apatite, chlorite, biotite, graphite, and actinolite; with traces of bornite and violarite and local garnet and hornblende (Hurst, 1932; Owens, 1968; Sinclair, 2004). Lenses of magnetite range in width from narrow stringers less than an inch wide to a maximum of about 100 ft (Ginn, 1947).

Vanadium is present according to Hurst (1932) who examined the property prior to any drilling, there are two belts of magnetite-bearing rocks defined by aligned but discontinuous outcrops. A northwest-striking "A-zone" was exposed at that time at the shore of a small lake that in some references had been referred to as Cribbage Lake. Both the magnetite bodies and the host mafic rocks of the A-zone are schistose. A north-striking "B-zone," located about 100 m west of "A-zone," was more extensive, and was about 100 to 150 m long.

Electron microprobe analysis of two samples of drill core described by Docherty and Germundson (2006) indicated that the average titanium dioxide content of the magnetite in the samples was 6.8%, while that in the ilmenite was 54.2% (Sinclair, 2004). About 60% of the titanium is contained in the ilmenite and 40% is in magnetite. There was negligible titanium dioxide in the subordinate amount of silicate minerals in the samples. According to Bayne (1967a, b, c, d) and Everard (1965), a bulk sample of 2,200 pounds collected from surface exposures and trenches in 1964 contained 32.7% iron and 16.9% titanium dioxide. According to Docherty and Germundson (2006) and based on 2004-2005 drill results for Section 5190200N, "*The average titanium dioxide content for the most hydrothermally replaced part of the host gabbro/troctolite ranges between 11.42% and 14.60% ( DDH's RA-05-05, 07, 08, 09, and 10 and RA-04-01).*" There is a close direct relationship between iron and titanium values.

In addition to minor amounts of chalcopyrite, the Titan mineralization includes locally anomalous amounts of platinum, palladium, and gold (Docherty and Germundson, 2006).

The Titan deposit is located at the northern end of an aeromagnetic anomaly that is 1,200 by 800 m in area. To date drilling has tested only about the northernmost 300 m of the anomaly (R. K. Germundson, October 5, 2006, personal communication). The deposit plunges to the southeast at over 60º and is open towards Cribbage Lake.

## 8.0 DEPOSIT TYPES

The Titan deposit is interpreted to be a layered mafic-ultramafic complex which has been metamorphosed and deformed during the Grenville Orogeny. Layered mafic-ultramafic complexes often have associated iron, iron-titanium, or platinum group metals mineralization. Iron-titanium mineralization in layered intrusions is typically associated with higher stratigraphic levels within the mafic-ultramafic complex where more evolved Fe-rich magmas accumulate due to the fractionation of Mg-rich minerals such as olivine and pyroxene. This fractionation can progress further to form Fe-rich deuteric fluids (hydrothermal fluids sourced from the intrusion itself) which can metasomatise (replace) the silicate rocks of the intrusion with Fe oxides, such as magnetite and ilmentie.

The Titan mineralization consists of iron and titanium with vanadium and anomalous platinum, palladium, and gold associated with a Proterozoic layered mafic-ultramafic complex in the Grenville Province of the Canadian Shield. Mineralization is related to hydrothermal replacement (metasomatism) of these mafic to ultramafic rocks (Docherty and Germundson, 2006, Germundson 2010).

# 9.0 EXPLORATION

## 9.1 Historic Exploration

The following discussion is largely taken from Docherty and Germundson (2006) and Ginn (1947).

Other than mapping by Hurst (1932) in the 1930s, the earliest exploration known to MDA of what is now called the Titan property was that of Titan Iron beginning in 1942. That company completed trenching, surface pitting, and sampling in 1942 and 1943, but no records from this work are available (Bayne, 1967b). They reconditioned and extended the trenches for a total of about 2,100 feet of trenching in 1947. According to Bayne (1967a) who used the trench data to make a resource estimate, the trenching exposed the Titan deposit "*at more or less regular intervals along 900 feet of strike, intermittently cross-sectioning a width of from 300 to 800 feet, but with continuous exposure for sampling across from 120 to 400 feet on all sections*." In 1947 Titan Iron also drilled 11 diamond drill holes for a total of 1,795 ft. These holes, drilled at -30º to -45º angles, were drilled to depths of 147 to 203 ft with two holes lost at depths of 31 and 74 ft. About half of the core in selected samples from the nine completed holes was analyzed. According to Bayne (1967d), these 20 core samples totaling 670.5 ft were assayed by Swastika Laboratories and the Ontario Department of Mines and averaged 41.10% iron and 19.69% titanium dioxide. As described in Section 6.0, The Ontario Department of Mines and Swastika Laboratories sampled the old trenches in 1948 and analyzed the samples for iron and titanium, with assays running 10.2% to 45.8% iron and 2.9% to 20.1% titanium dioxide. The average of these 120 samples was 32.56% iron and 14.80% titanium dioxide (Bayne, 1967c, d). MDA has seen no data from Titan Iron's drilling program in 1947 other than brief geologic logs with hand-written assays from the 20 samples taken (Bayne, 1967d); the resource estimate in Section 14.0 does not include the Titan Iron data and is based entirely on Randsburg's drill program.

The property was again sampled in 1964 by Watts, Griffiths and McOuat Limited for Southfield Mines Limited with assays performed by Technical Service Laboratories of Toronto. Twelve composite bulk samples of chips across seven representative trenches and outcrops averaged 42.20% total iron, 37.27% acid soluble iron, and 18.53% titanium dioxide (Bayne, 1967d; Watts, 1964). Also in 1964, a 2,200 lb bulk sample from 16 trenches was assayed by the Ontario Research Foundation and yielded 32.7% iron and 16.9% titanium dioxide (Bayne, 1967d).

In 1966, Lockwood flew an airborne magnetic survey over the Fanny Lake-Fall Lake area at the request of Titan Iron. The survey covered 20 sq mi and was flown at 500 ft mean ground clearance (Bayne, 1967b). E. R. Mead (1969) conducted a ground magnetic survey of the Titan property for Lake Ontario Steel Company Ltd. in 1968. A Sharpe MF 1 fluxgate magnetometer was used for this survey, which covered 74 line miles. Stations were read at 100-, 50-, or 25-ft intervals based on variations in magnetic intensity. Based on this survey, Mead (1969) concluded that the titaniferous magnetite that crops out near Cribbage Lake is on the nose of a southeast-plunging syncline and that material similar to outcrop samples with a grade of about 35% iron and 15% titanium dioxide might compose half of the rock underlying an area of about 1,200 ft by 700 ft.

MDA is unaware of any exploration work other than that described above prior to Randsburg's involvement with the Titan property.

## 9.2 Randsburg's Exploration

In 2004, Randsburg conducted regional airborne magnetometer and EM surveys over a portion of eastern Flett Township east of the railroad and continuing over the Fall Lake intrusion into Angus Township. During 2004 and 2005, Randsburg drilled 29 diamond drill holes to test a magnetic and electromagnetic anomaly that coincides with magnetite-ilmenite bearing rocks in Angus Township. Seven holes drilled in 2004 totaled 1,798 m; 22 drilled in 2005 totaled 6,377 m. Based on the results of this drilling, Docherty and Germundson (2006) summarized:

> *The best indications are that the southern and northern limits have been defined but step out tests for the east and southwest are recommended*; and

- *The magnetite-ilmenite mineralization is present as a body that plunges steeply towards the southeast. Its character south of 5190100N is little known due to relatively widespread wet ground. Winter drilling is planned in order to continue the evaluation. Relatively strong magnetism extends southeasterly for 700 to 800 metres.*
- *Titanium and vanadium are present in the intrusive complex away from the areas of pronounced magnetite content although in lower amounts.*
- *Susceptibility and assay data generally correlate directly.*
- *At present the deposit is open, in part, towards the north, east, and the west, and, in several holes, to depth. The extent towards the south is under evaluated.*
- *The greatest intersection to date is from hole RA-05-11, which is continuously mineralized for its entire length, 440 metres of 14.2 % titanium dioxide, 45.6% iron oxide and 0.22% vanadium.*

In 2006 Randsburg drilled eight vertical holes for a total of 1,858 m.

## 9.3 Prophecy Exploration

Prophecy exploration has been limited to a geologic investigation in 2010, and a GPS survey of the claims in 2014.

# 10.0 DRILLING

Titan Iron drilled the Titan mineralization in 1947. Brief geologic logs of Titan Iron's 11 core holes were reviewed by MDA, but the exact locations of these holes are uncertain. The logs included hand-written assays for the 20 samples taken that were added much later than the original drilling (Bayne, 1967d). The core was EXT-size or 7/8 inch in diameter, which was thought to have been too small for full recovery of the mineralization (Bayne, 1967d).

Randsburg's program from 2004 through 2006 is the only drilling for which MDA has detailed information (Figure 10.1). All of Randsburg's holes were diamond drill core holes. The holes drilled in 2004 were NQ holes, while those drilled in 2005 and 2006 were BQ holes (personal communication, 2006, Randsburg). Heath & Sherwood of Kirkland Lake drilled the 2004 holes; RonKor of Sudbury drilled the 2005 and 2006 holes. The seven holes drilled in 2004 (RA-04-1 through RA-04-7) totaled 1,798 m. Six of the seven were angle holes. The 22 holes drilled in 2005 (RA-05-1 through RA-05-22) totaled 6,377 m. All but two of the 2005 holes were vertical holes. Eight vertical holes were drilled in 2006 (RA-06-01 through RA-06-08) for a total of 1,858 m. Randsburg's holes are the only ones for which MDA has detailed assay information.

Table 10.1 summarizes Randsburg's drilling on the property. A total of 4,898 assay intervals are contained in the database. Table 10.2 shows the extent of the drilling on the property. Table 10.3 shows the list of drill holes completed on the property. Note that the drill hole coordinates were obtained by a handheld GPS with limited accuracy. All values are metric and in terms of UTM coordinates (NAD 83dataum).

**Table 10.1 Randsburg Drilling Summary**

| Year | Holes | Meters |
|---|---|---|
| 2004 | 8 | 1,854.3 |
| 2005 | 22 | 6,595.0 |
| 2006 | 8 | 1,858.0 |
| **Totals** | **38** | **10,307.3** |

**Table 10.2 Extent of Drilling**

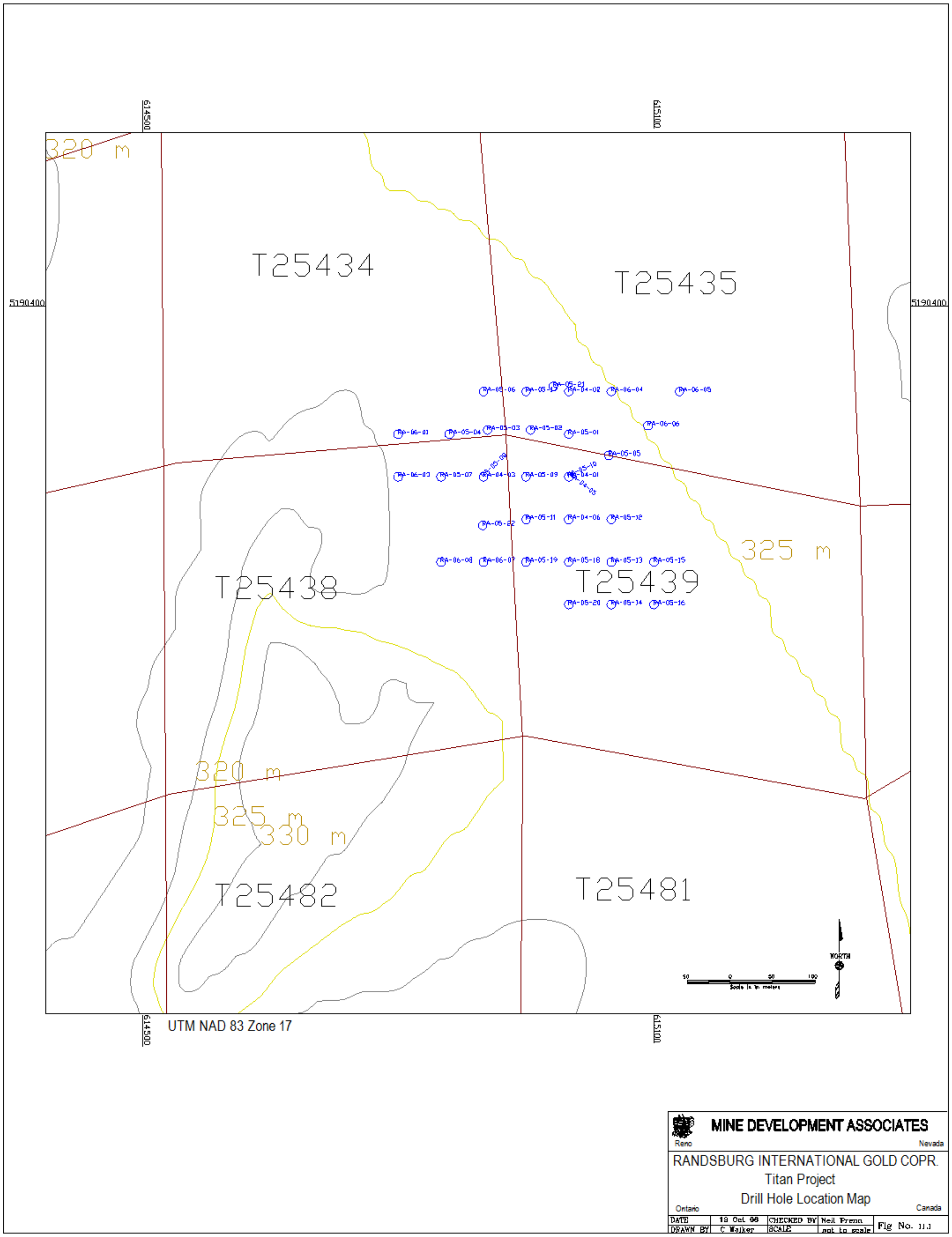
| Item | Hole Id | Northing | Easting | Elevation | Depth |
|---|---|---|---|---|---|
| Northing - Minimum | RA-04-08 | 5,187,100 | 614,500 | 320 | 53.1 |
| Northing - Maximum | RA-05-21 | 5,190,306 | 614,982 | 320 | 200.0 |
| Easting - Minimum | RA-04-08 | 5,187,100 | 614,500 | 320 | 53.1 |
| Easting - Maximum | RA-06-05 | 5,190,300 | 615,130 | 320 | 257.0 |
| Elevation - Minimum* | RA-04-01 | 5,190,200 | 615,000 | 320 | 169.2 |
| Elevation - Maximum* | RA-04-01 | 5,190,200 | 615,000 | 320 | 169.2 |
| Depth - Minimum | RA-04-08 | 5,187,100 | 614,500 | 320 | 53.1 |
| Depth - Maximum | RA-05-14 | 5,190,050 | 615,050 | 320 | 605.0 |

*Estimated-MDA believes that the actual elevations may vary by ± 15 meters

## Table 10.3 Drill Hole Coordinates

| Hole | North | East | Elevation | Dip | Azmuth | Depth |
|---|---|---|---|---|---|---|
| RA-04-01 | 5190200 | 615000 | 320 | -45 | 270 | 169.2 |
| RA-04-02 | 5190300 | 615000 | 320 | -45 | 90 | 260.6 |
| RA-04-03 | 5190200 | 614900 | 320 | -45 | 270 | 254.4 |
| RA-04-04 | 5190000 | 615000 | 320 | -45 | 270 | 240.0 |
| RA-04-05 | 5190200 | 615000 | 320 | -45 | 270 | 238.0 |
| RA-04-06 | 5190150 | 615000 | 320 | -90 | 0 | 387.0 |
| RA-04-07 | 5190300 | 615000 | 320 | -45 | 270 | 252.0 |
| RA-04-08 | 5187100 | 614500 | 320 | -80 | 135 | 53.1 |
| RA-05-01 | 5190250 | 615000 | 320 | -90 | 0 | 200.0 |
| RA-05-02 | 5190255 | 614955 | 320 | -90 | 0 | 200.0 |
| RA-05-03 | 5190255 | 614905 | 320 | -90 | 0 | 200.0 |
| RA-05-04 | 5190250 | 614860 | 320 | -90 | 0 | 200.0 |
| RA-05-05 | 5190225 | 615047 | 320 | -90 | 0 | 200.0 |
| RA-05-06 | 5190300 | 614900 | 320 | -90 | 0 | 200.0 |
| RA-05-07 | 5190200 | 614850 | 320 | -90 | 0 | 200.0 |
| RA-05-08 | 5190200 | 614900 | 320 | -90 | 0 | 202.0 |
| RA-05-09 | 5190200 | 614950 | 320 | -90 | 0 | 402.0 |
| RA-05-10 | 5190200 | 615000 | 320 | -90 | 0 | 414.0 |
| RA-05-11 | 5190150 | 614950 | 320 | -90 | 0 | 440.0 |
| RA-05-12 | 5190150 | 615050 | 320 | -90 | 0 | 416.0 |
| RA-05-13 | 5190100 | 615050 | 320 | -90 | 0 | 535.0 |
| RA-05-14 | 5190050 | 615050 | 320 | -90 | 0 | 605.0 |
| RA-05-15 | 5190100 | 615100 | 320 | -90 | 0 | 200.0 |
| RA-05-16 | 5190050 | 615100 | 320 | -90 | 0 | 401.0 |
| RA-05-17 | 5190300 | 614950 | 320 | -90 | 0 | 200.0 |
| RA-05-18 | 5190100 | 615000 | 320 | -80 | 90 | 300.0 |
| RA-05-19 | 5190100 | 614950 | 320 | -90 | 0 | 300.0 |
| RA-06-01 | 5190250 | 614800 | 320 | -90 | 0 | 253.0 |
| RA-06-02 | 5190250 | 614750 | 320 | -90 | 0 | 198.0 |
| RA-06-03 | 5190200 | 614800 | 320 | -90 | 0 | 200.0 |
| RA-06-04 | 5190300 | 615050 | 320 | -90 | 0 | 275.0 |
| RA-06-05 | 5190300 | 615130 | 320 | -90 | 0 | 257.0 |
| RA-06-06 | 5190260 | 615093 | 320 | -90 | 0 | 275.0 |
| RA-06-07 | 5190100 | 614900 | 320 | -90 | 0 | 200.0 |
| RA-06-08 | 5190100 | 614850 | 320 | -90 | 0 | 200.0 |
| RA-05-22 | 5190143 | 614899 | 320 | -90 | 0 | 302.0 |
| RA-05-21 | 5190306 | 614982 | 320 | -90 | 0 | 200.0 |
| RA-05-20 | 5190050 | 615000 | 320 | -80 | 90 | 278.0 |

# Figure 10.1 Randsburg's Drill Holes



## 10.1 Sample Preparation

MDA has no information on sampling or any other aspect of Titan Iron's drill program in the 1940s.

The only sampling information available to MDA was from Randsburg's drill program. The 38 drill holes completed by Randsburg are spaced on approximately 50-meter centers. According to Docherty and Germundson (2006), Randsburg's core in the 2004 through 2006 drill programs was cut longitudinally with a diamond saw and sampled in six-foot or two-meter lengths. Core recovery was not recorded on the logs, however, was reported to be good. Half of the sawed core was shipped to Chemex Labs for sample preparation and analysis.

## 10.2 Significant Drill Hole Intercepts

Table 10.4 summarizes the mineralized intervals above 35% $Fe_2O_3$.

### Table 10.4 Mineralized Intervals

| Hole | North | East | Elevation | From | To | Interval | % $Fe_2O_3$ | % $TiO_2$ | % V |
|---|---|---|---|---|---|---|---|---|---|
| | (top of zone) | | | | | | | | |
| RA-04-01 | 5,190,200 | 614,998 | 318 | 2.1 | 13.1 | 11.0 | 40.65 | 11.89 | |
| RA-04-01 | 5,190,200 | 614,974 | 294 | 36.9 | 57.0 | 20.1 | 47.80 | 14.50 | |
| RA-04-01 | 5,190,200 | 614,956 | 276 | 62.5 | 102.7 | 40.2 | 49.47 | 15.48 | |
| RA-04-01 | 5,190,200 | 614,922 | 242 | 110.0 | 169.2 | 59.1 | 49.42 | 15.77 | |
| RA-04-02 | 5,190,300 | 615,001 | 319 | 1.2 | 141.1 | 139.9 | 42.97 | 12.68 | |
| RA-04-02 | 5,190,300 | 615,159 | 161 | 225.2 | 254.5 | 29.3 | 39.88 | 11.03 | |
| RA-04-03 | 5,190,200 | 614,899 | 319 | 1.3 | 35.3 | 34.0 | 47.53 | 15.25 | 0.18 |
| RA-04-03 | 5,190,200 | 614,867 | 287 | 47.3 | 69.3 | 22.0 | 53.86 | 16.99 | 0.18 |
| RA-04-05 | 5,190,200 | 615,003 | 317 | 4.8 | 8.8 | 4.0 | 52.90 | 16.28 | 0.28 |
| RA-04-06 | 5,190,150 | 615,000 | 318 | 1.9 | 7.9 | 6.0 | 48.20 | 14.02 | 0.24 |
| RA-04-06 | 5,190,150 | 615,000 | 260 | 59.9 | 63.9 | 4.0 | 51.80 | 15.48 | 0.27 |
| RA-04-06 | 5,190,150 | 615,000 | 250 | 69.9 | 87.9 | 18.0 | 42.46 | 12.18 | 0.21 |
| RA-04-06 | 5,190,150 | 615,000 | 212 | 107.9 | 115.9 | 8.0 | 53.18 | 16.58 | 0.28 |
| RA-04-06 | 5,190,150 | 615,000 | 166 | 153.9 | 181.9 | 28.0 | 54.91 | 16.73 | 0.30 |
| RA-04-06 | 5,190,150 | 615,000 | 112 | 207.9 | 239.9 | 32.0 | 50.74 | 15.52 | 0.25 |
| RA-04-06 | 5,190,150 | 615,000 | 76 | 243.9 | 291.9 | 48.0 | 53.93 | 17.55 | 0.28 |
| RA-04-06 | 5,190,150 | 615,000 | -4 | 323.9 | 331.9 | 8.0 | 45.38 | 14.33 | 0.21 |
| RA-04-06 | 5,190,150 | 615,000 | -38 | 357.9 | 369.9 | 12.0 | 44.35 | 13.46 | 0.21 |
| RA-04-06 | 5,190,150 | 615,000 | -60 | 379.9 | 387.0 | 7.2 | 45.09 | 13.44 | 0.21 |
| RA-04-07 | 5,190,300 | 614,998 | 318 | 3.2 | 109.2 | 106.0 | 44.61 | 13.29 | 0.22 |
| RA-04-07 | 5,190,300 | 614,889 | 209 | 157.2 | 177.2 | 20.0 | 50.94 | 16.09 | 0.26 |
| RA-05-01 | 5,190,250 | 615,000 | 318 | 2.0 | 60.0 | 58.0 | 47.69 | 14.59 | 0.23 |
| RA-05-01 | 5,190,250 | 615,000 | 256 | 64.0 | 104.0 | 40.0 | 48.40 | 14.11 | 0.23 |
| RA-05-01 | 5,190,250 | 615,000 | 212 | 108.0 | 192.0 | 84.0 | 49.07 | 14.61 | 0.25 |
| RA-05-02 | 5,190,255 | 614,955 | 318 | 2.0 | 30.0 | 28.0 | 45.76 | 14.02 | 0.23 |
| RA-05-02 | 5,190,255 | 614,955 | 280 | 40.0 | 166.0 | 126.0 | 47.75 | 15.22 | 0.24 |
| RA-05-03 | 5,190,255 | 614,905 | 314 | 6.0 | 40.0 | 34.0 | 52.03 | 16.34 | 0.26 |
| RA-05-03 | 5,190,255 | 614,905 | 240 | 80.0 | 100.0 | 20.0 | 45.57 | 14.53 | 0.21 |
| RA-05-03 | 5,190,255 | 614,905 | 194 | 126.0 | 132.0 | 6.0 | 41.57 | 12.38 | 0.18 |
| RA-05-04 | 5,190,250 | 614,860 | 278 | 42.0 | 76.0 | 34.0 | 37.76 | 12.05 | 0.16 |
| RA-05-04 | 5,190,250 | 614,860 | 206 | 114.0 | 120.0 | 6.0 | 41.97 | 13.15 | 0.15 |
| RA-05-04 | 5,190,250 | 614,860 | 180 | 140.0 | 148.0 | 8.0 | 41.58 | 12.34 | 0.19 |
| RA-05-04 | 5,190,250 | 614,860 | 162 | 158.0 | 198.0 | 40.0 | 49.11 | 16.01 | 0.24 |
| RA-05-06 | 5,190,300 | 614,900 | 312 | 8.0 | 18.0 | 10.0 | 37.12 | 11.54 | 0.17 |
| RA-05-06 | 5,190,300 | 614,900 | 156 | 164.0 | 172.0 | 8.0 | 39.03 | 12.08 | 0.19 |
| RA-05-06 | 5,190,300 | 614,900 | 136 | 184.0 | 200.0 | 16.0 | 41.99 | 12.43 | 0.18 |
| RA-05-08 | 5,190,200 | 614,900 | 319 | 1.0 | 63.0 | 62.0 | 49.92 | 15.34 | 0.24 |
| RA-05-08 | 5,190,200 | 614,900 | 251 | 69.0 | 169.0 | 100.0 | 52.45 | 16.69 | 0.25 |
| RA-05-09 | 5,190,200 | 614,950 | 316 | 4.0 | 34.0 | 30.0 | 49.27 | 15.60 | 0.25 |
| RA-05-09 | 5,190,200 | 614,950 | 276 | 44.0 | 76.0 | 32.0 | 46.74 | 14.87 | 0.23 |
| RA-05-09 | 5,190,200 | 614,950 | 238 | 82.0 | 270.0 | 188.0 | 46.91 | 14.39 | 0.21 |
| RA-05-09 | 5,190,200 | 614,950 | -10 | 330.0 | 336.0 | 6.0 | 52.87 | 16.30 | 0.26 |
| RA-05-10 | 5,190,200 | 615,000 | 314 | 6.0 | 10.0 | 4.0 | 31.45 | 9.09 | 0.15 |
| RA-05-10 | 5,190,200 | 615,000 | 278 | 42.0 | 64.0 | 22.0 | 52.42 | 16.34 | 0.28 |
| RA-05-10 | 5,190,200 | 615,000 | 252 | 68.0 | 80.0 | 12.0 | 50.83 | 15.39 | 0.25 |
| RA-05-10 | 5,190,200 | 615,000 | 218 | 102.0 | 276.0 | 174.0 | 50.97 | 15.68 | 0.26 |
| RA-05-10 | 5,190,200 | 615,000 | -16 | 336.0 | 346.0 | 10.0 | 50.46 | 15.95 | 0.25 |
| RA-05-10 | 5,190,200 | 615,000 | -32 | 352.0 | 414.0 | 62.0 | 57.16 | 18.67 | 0.28 |

# Table 10.4 Mineralized Intervals (Continued)

| Hole | North | East | Elevation | From | To | Interval | % $Fe_2O_3$ | % $TiO_2$ | % V |
|---|---|---|---|---|---|---|---|---|---|
| | (top of zone) | | | | | | | | |
| RA-05-11 | 5,190,150 | 614,950 | 316 | 4.0 | 8.0 | 4.0 | 49.60 | 15.45 | 0.26 |
| RA-05-11 | 5,190,150 | 614,950 | 304 | 16.0 | 40.0 | 24.0 | 47.93 | 14.92 | 0.23 |
| RA-05-11 | 5,190,150 | 614,950 | 272 | 48.0 | 70.0 | 22.0 | 39.39 | 11.38 | 0.17 |
| RA-05-11 | 5,190,150 | 614,950 | 226 | 94.0 | 114.0 | 20.0 | 38.13 | 11.50 | 0.17 |
| RA-05-11 | 5,190,150 | 614,950 | 190 | 130.0 | 136.0 | 6.0 | 41.97 | 13.12 | 0.21 |
| RA-05-11 | 5,190,150 | 614,950 | 174 | 146.0 | 236.0 | 90.0 | 53.75 | 16.74 | 0.27 |
| RA-05-11 | 5,190,150 | 614,950 | 76 | 244.0 | 254.0 | 10.0 | 55.30 | 18.16 | 0.28 |
| RA-05-11 | 5,190,150 | 614,950 | 64 | 256.0 | 358.0 | 102.0 | 56.76 | 18.81 | 0.28 |
| RA-05-11 | 5,190,150 | 614,950 | -48 | 368.0 | 384.0 | 16.0 | 47.83 | 15.68 | 0.23 |
| RA-05-11 | 5,190,150 | 614,950 | -80 | 400.0 | 440.0 | 40.0 | 51.23 | 16.87 | 0.25 |
| RA-05-12 | 5,190,150 | 615,050 | 52 | 268.0 | 290.0 | 22.0 | 49.12 | 15.04 | 0.20 |
| RA-05-12 | 5,190,150 | 615,050 | 6 | 314.0 | 354.0 | 40.0 | 46.53 | 14.11 | 0.22 |
| RA-05-12 | 5,190,150 | 615,050 | -54 | 374.0 | 380.0 | 6.0 | 51.83 | 15.62 | 0.26 |
| RA-05-12 | 5,190,150 | 615,050 | -70 | 390.0 | 410.0 | 20.0 | 51.20 | 15.52 | 0.26 |
| RA-05-13 | 5,190,100 | 615,050 | 96 | 224.0 | 248.0 | 24.0 | 44.94 | 13.47 | 0.22 |
| RA-05-13 | 5,190,100 | 615,050 | 68 | 252.0 | 302.0 | 50.0 | 43.55 | 12.86 | 0.21 |
| RA-05-13 | 5,190,100 | 615,050 | 12 | 308.0 | 390.0 | 82.0 | 51.35 | 15.84 | 0.27 |
| RA-05-13 | 5,190,100 | 615,050 | -78 | 398.0 | 462.0 | 64.0 | 45.63 | 14.83 | 0.25 |
| RA-05-13 | 5,190,100 | 615,050 | -150 | 470.0 | 508.0 | 38.0 | 47.65 | 15.23 | 0.24 |
| RA-05-14 | 5,190,050 | 615,050 | -91 | 411.0 | 427.0 | 16.0 | 37.11 | 10.27 | 0.17 |
| RA-05-14 | 5,190,050 | 615,050 | -115 | 435.0 | 455.0 | 20.0 | 37.33 | 10.43 | 0.17 |
| RA-05-14 | 5,190,050 | 615,050 | -141 | 461.0 | 477.0 | 16.0 | 39.21 | 11.31 | 0.18 |
| RA-05-14 | 5,190,050 | 615,050 | -167 | 487.0 | 503.0 | 16.0 | 43.06 | 12.84 | 0.21 |
| RA-05-14 | 5,190,050 | 615,050 | -193 | 513.0 | 539.0 | 26.0 | 54.76 | 17.32 | 0.26 |
| RA-05-17 | 5,190,300 | 614,950 | 312 | 8.0 | 84.0 | 76.0 | 46.72 | 14.50 | 0.24 |
| RA-05-18 | 5,190,100 | 615,019 | 212 | 110.0 | 134.0 | 24.0 | 41.39 | 12.16 | 0.19 |
| RA-05-18 | 5,190,100 | 615,036 | 117 | 206.0 | 240.0 | 34.0 | 51.74 | 16.56 | 0.27 |
| RA-05-18 | 5,190,100 | 615,043 | 78 | 246.0 | 300.0 | 54.0 | 49.45 | 16.09 | 0.24 |
| RA-05-19 | 5,190,100 | 614,950 | 290 | 30.0 | 40.0 | 10.0 | 42.70 | 13.86 | 0.20 |
| RA-05-19 | 5,190,100 | 614,950 | 272 | 48.0 | 66.0 | 18.0 | 44.20 | 13.10 | 0.20 |
| RA-05-19 | 5,190,100 | 614,950 | 228 | 92.0 | 98.0 | 6.0 | 41.70 | 12.17 | 0.18 |
| RA-05-19 | 5,190,100 | 614,950 | 128 | 192.0 | 216.0 | 24.0 | 43.40 | 13.07 | 0.20 |
| RA-05-19 | 5,190,100 | 614,950 | 94 | 226.0 | 252.0 | 26.0 | 47.78 | 14.80 | 0.22 |
| RA-05-19 | 5,190,100 | 614,950 | 60 | 260.0 | 300.0 | 40.0 | 49.78 | 15.24 | 0.23 |
| RA-05-21 | 5,190,306 | 614,982 | 317 | 3.0 | 145.0 | 142.0 | 51.22 | 16.01 | 0.27 |
| RA-05-22 | 5,190,143 | 614,899 | 317 | 3.0 | 11.0 | 8.0 | 53.25 | 17.36 | 0.27 |
| RA-05-22 | 5,190,143 | 614,899 | 303 | 17.0 | 49.0 | 32.0 | 58.59 | 19.09 | 0.29 |
| RA-05-22 | 5,190,143 | 614,899 | 259 | 61.0 | 77.0 | 16.0 | 47.59 | 15.17 | 0.23 |
| RA-05-22 | 5,190,143 | 614,899 | 209 | 111.0 | 129.0 | 18.0 | 52.94 | 17.77 | 0.27 |
| RA-05-22 | 5,190,143 | 614,899 | 171 | 149.0 | 267.0 | 118.0 | 56.78 | 19.02 | 0.29 |
| RA-05-22 | 5,190,143 | 614,899 | 41 | 279.0 | 287.0 | 8.0 | 46.60 | 17.15 | 0.27 |
| RA-06-04 | 5,190,300 | 615,050 | 312 | 8.0 | 36.0 | 28.0 | 47.59 | 13.99 | 0.25 |
| RA-06-04 | 5,190,300 | 615,050 | 278 | 42.0 | 76.0 | 34.0 | 45.89 | 13.28 | 0.23 |
| RA-06-04 | 5,190,300 | 615,050 | 234 | 86.0 | 106.0 | 20.0 | 54.21 | 16.80 | 0.29 |
| RA-06-04 | 5,190,300 | 615,050 | 202 | 118.0 | 126.0 | 8.0 | 45.85 | 13.81 | 0.31 |
| RA-06-04 | 5,190,300 | 615,050 | 166 | 154.0 | 200.0 | 46.0 | 42.61 | 11.84 | 0.20 |
| RA-06-04 | 5,190,300 | 615,050 | 108 | 212.0 | 230.0 | 18.0 | 42.42 | 12.65 | 0.23 |
| RA-06-04 | 5,190,300 | 615,050 | 80 | 240.0 | 264.0 | 24.0 | 49.66 | 15.25 | 0.26 |
| RA-06-05 | 5,190,300 | 615,130 | 318 | 2.0 | 30.0 | 28.0 | 42.39 | 12.22 | 0.23 |
| RA-06-05 | 5,190,300 | 615,130 | 278 | 42.0 | 56.0 | 14.0 | 43.11 | 12.75 | 0.24 |
| RA-06-05 | 5,190,300 | 615,130 | 248 | 72.0 | 84.0 | 12.0 | 41.12 | 11.50 | 0.21 |
| RA-06-05 | 5,190,300 | 615,130 | 186 | 134.0 | 146.0 | 12.0 | 37.73 | 11.06 | 0.20 |
| RA-06-05 | 5,190,300 | 615,130 | 144 | 176.0 | 254.0 | 78.0 | 44.44 | 12.94 | 0.23 |
| RA-06-06 | 5,190,260 | 615,093 | 312 | 8.0 | 12.0 | 4.0 | 53.10 | 17.10 | 0.33 |
| RA-06-06 | 5,190,260 | 615,093 | 304 | 16.0 | 32.0 | 16.0 | 40.59 | 11.67 | 0.22 |
| RA-06-06 | 5,190,260 | 615,093 | 284 | 36.0 | 50.0 | 14.0 | 42.66 | 12.43 | 0.24 |
| RA-06-06 | 5,190,260 | 615,093 | 264 | 56.0 | 84.0 | 28.0 | 47.06 | 13.90 | 0.27 |
| RA-06-06 | 5,190,260 | 615,093 | 232 | 88.0 | 122.0 | 34.0 | 42.71 | 12.45 | 0.23 |
| RA-06-06 | 5,190,260 | 615,093 | 166 | 154.0 | 275.0 | 121.0 | 46.96 | 13.94 | 0.24 |
| RA-06-07 | 5,190,100 | 614,900 | 306 | 14.0 | 44.0 | 30.0 | 47.03 | 15.53 | 0.23 |
| RA-06-07 | 5,190,100 | 614,900 | 268 | 52.0 | 72.0 | 20.0 | 42.39 | 14.27 | 0.20 |
| RA-06-07 | 5,190,100 | 614,900 | 166 | 154.0 | 178.0 | 24.0 | 46.83 | 16.30 | 0.23 |

# 11.0 SAMPLE PREPARATION, ANALYSES AND SECURITY

For Randsburg's 2004 and 2005 drilling, Docherty and Gemundson (2006) summarized sample preparation, analyses, and security as follows:

*Either R. Ken Germundson or bonded carrier, Manitoulin Transport, transported the samples from Temagami to the ALS Chemex facility in Mississauga. From here the security system used by Chemex was put in place. The samples were crushed and a fraction of the pulp was airlifted to Vancouver for analyses.*

*The analytical lab manager at Chemex has indicated that the high magnetite content of the samples can cause a problem with the fusion. One common solution is to reduce the sample to flux ratio, such that the nominal sample weight may be considerably less than 30 grams.*

*The ME-ICP 81 package, which involves a sodium peroxide fusion, acid dissolution and ICP AES finish, was the preferred analytical choice as it gives a more accurate representation of titanium. The 17-element package includes nickel and copper.*

*Vanadium was assayed via atomic absorption.*

*For Au, Pt and Pd, a fire assay PGM-ICP23 method was used, which includes an ICP AES finish.*

## 11.1 Check Assays

There was no check assaying conducted for any of Randsburg's drilling. There is one metallurgical test for which the composite from 38 meters of core from drill hole RA-04-06 was made and chemically assayed by Altairnano. The comparison of drill core ICP analysis to the Altairnano chemical analysis is shown in Table 11.1, which shows the chemical analysis somewhat lower than the ICP analysis of the core.

**Table 11.1 Metallurgical Test Composite vs Drill Hole Analysis**

| Source | Weight (kg) | % $Fe_2O_3$ | % Fe | % $TiO_2$ | % V | % $V_2O_5$ | % $Nb_2O_5$ |
|---|---|---|---|---|---|---|---|
| Total Combined Composite (Drill Hole Assay) | 72.74 | 57.01 | 39.87 | 18.34 | 0.30 | 0.56* | NA |
| Altairnano Chemical Assay | NA | 53.51 | NA | 18.24 | 0.27** | 0.50 | 0.14 |

* Calculated from %V

**Calculated from %$V_2O_5$

## 11.2 Sample Statistics

Table 11.2 summarizes the descriptive statistics of the drill hole data. A histogram shown in Figure 11.1, was plotted for $Fe_2O_3$ values which appeared to indicate two normally distributed populations. The scatterplot of $Fe_2O_3$ and $TiO_2$ values shown in Figure 11.2 indicates that, as iron content increases, so does titanium.

**Table 11.2 Drill Hole Statistics**

| Item | Number | Mean | Minimum | Maximum | Std.Dev. | C.V. |
|---|---|---|---|---|---|---|
| **Al2O3** | 3,597 | 12.67 | 4.58 | 23.00 | 3.75 | 0.30 |
| **CaO** | 3,597 | 4.54 | 0.00 | 20.10 | 2.30 | 0.51 |
| **Co** | 2,674 | 0.01 | 0.00 | 0.03 | 0.01 | 0.38 |
| **Fe** | 3,597 | 23.79 | 1.32 | 45.80 | 9.84 | 0.41 |
| **Fe2O3** | 4,762 | 34.17 | 1.90 | 67.70 | 14.51 | 0.42 |
| **MgO** | 3,597 | 6.22 | 0.55 | 20.70 | 1.89 | 0.30 |
| **MnO** | 2,674 | 0.27 | 0.02 | 0.45 | 0.07 | 0.25 |
| **Ni** | 2,674 | 0.03 | 0.00 | 0.07 | 0.01 | 0.43 |
| **SiO2** | 3,597 | 28.67 | 3.31 | 71.60 | 11.81 | 0.41 |
| **TiO2** | 4,762 | 9.82 | 0.23 | 22.80 | 5.38 | 0.55 |
| **V** | 4,583 | 0.15 | 0.00 | 0.52 | 0.09 | 0.62 |

MDA believes that the sample preparation, security, and analytical methods are adequate to determine resources for the area of the project defined by drilling.

**Figure 11.1 Histogram of $Fe_2O_3$ Values**

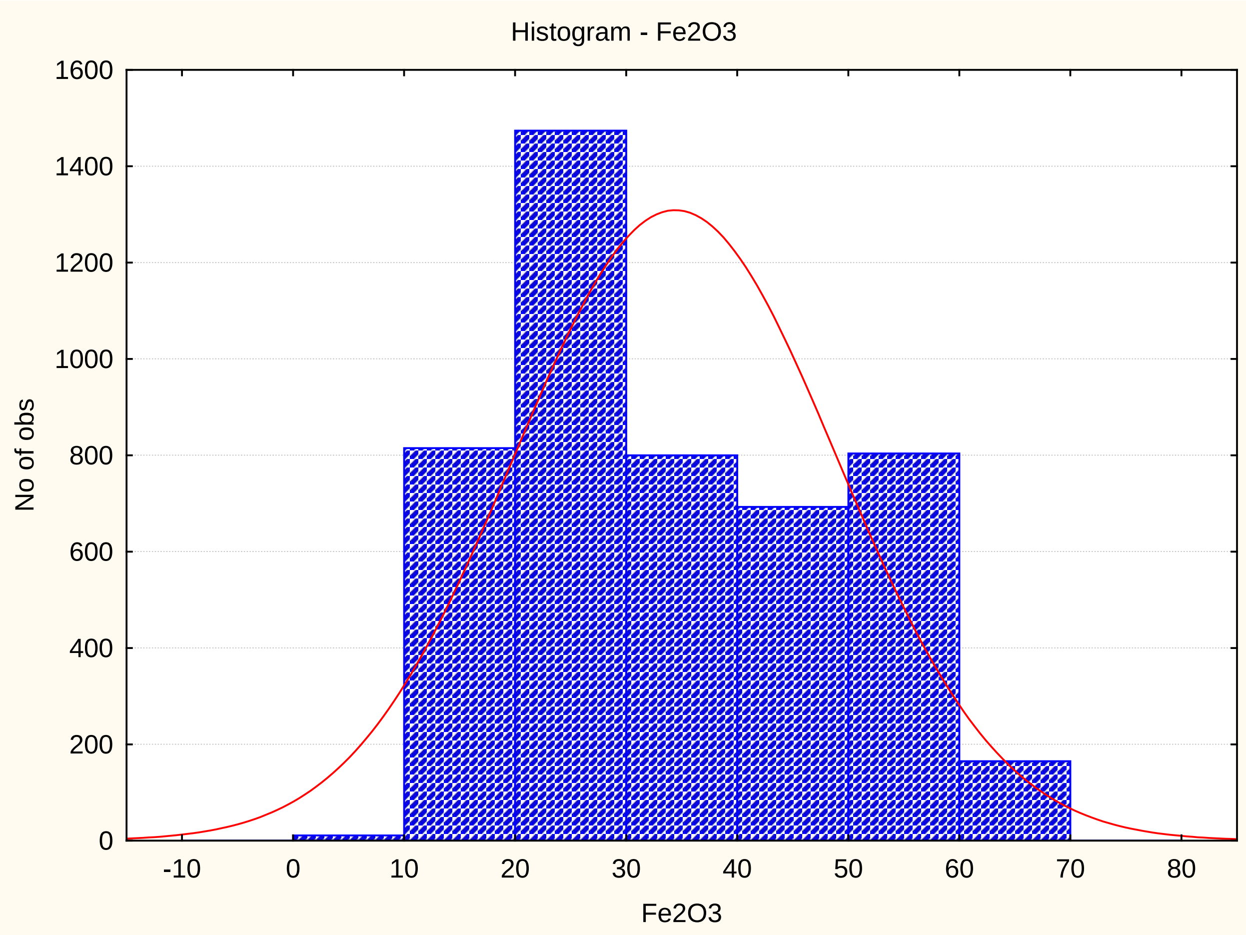
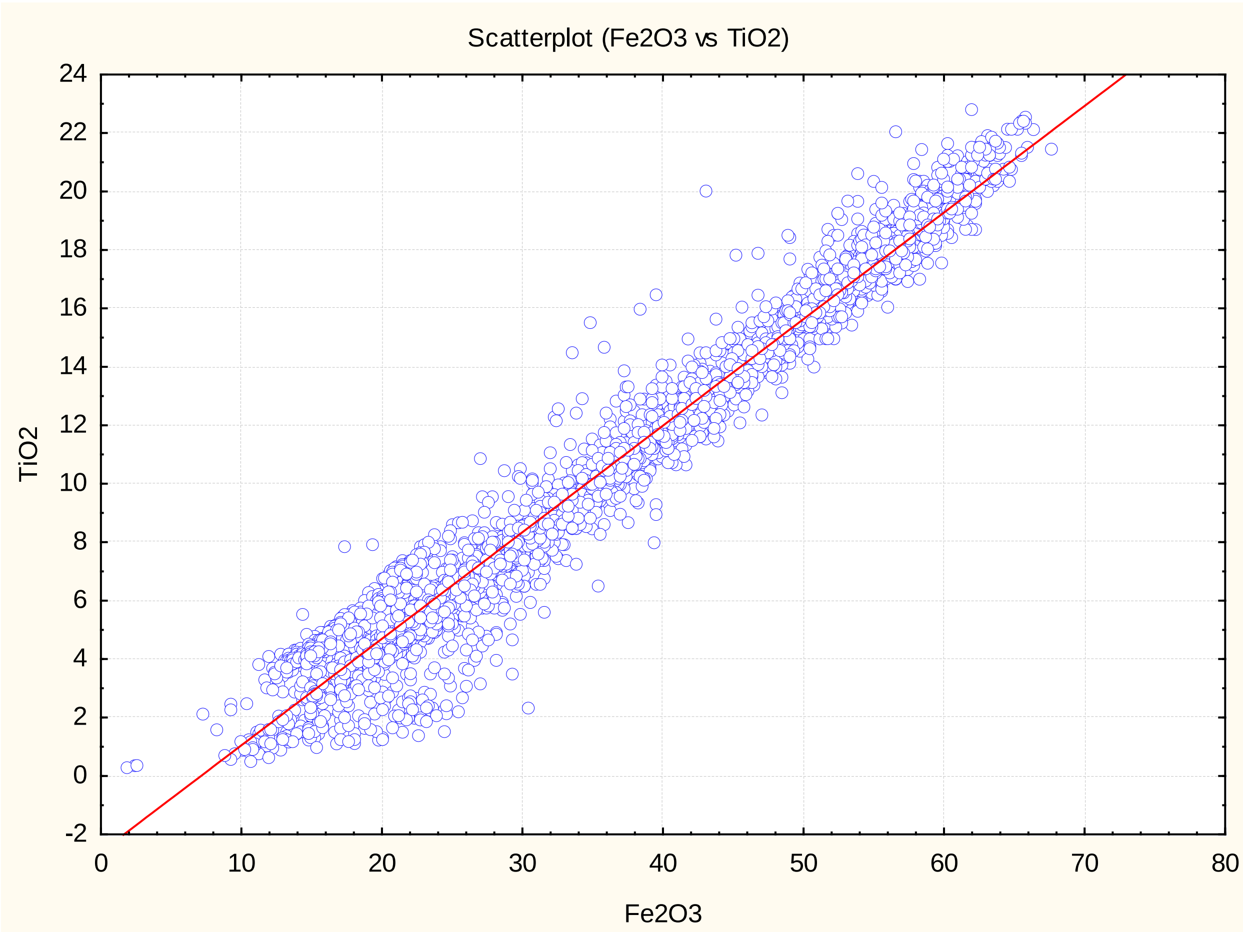


**Figure 11.2 Scatterplot of $Fe_2O_3$ and $TiO_2$ Values**




MDA Investigated the distribution of iron and titanium in the deposit by making qq plots for $Fe_2O_3$ and $TiO_2$ values contained in the database. These plots are shown in Figures 11.3 and 11.4 for $Fe_2O_3$ and $TiO_2$ respectively. Figure 11.3 indicates several inflections at 15.5, 20, 25, and around 40-45% $Fe_2O_3$. The qq plot for $TiO_2$ shows changes in slope around 4, 7, and 12% $TiO_2$.

# Figure 11.3 QQ Plot of $Fe_2O_3$

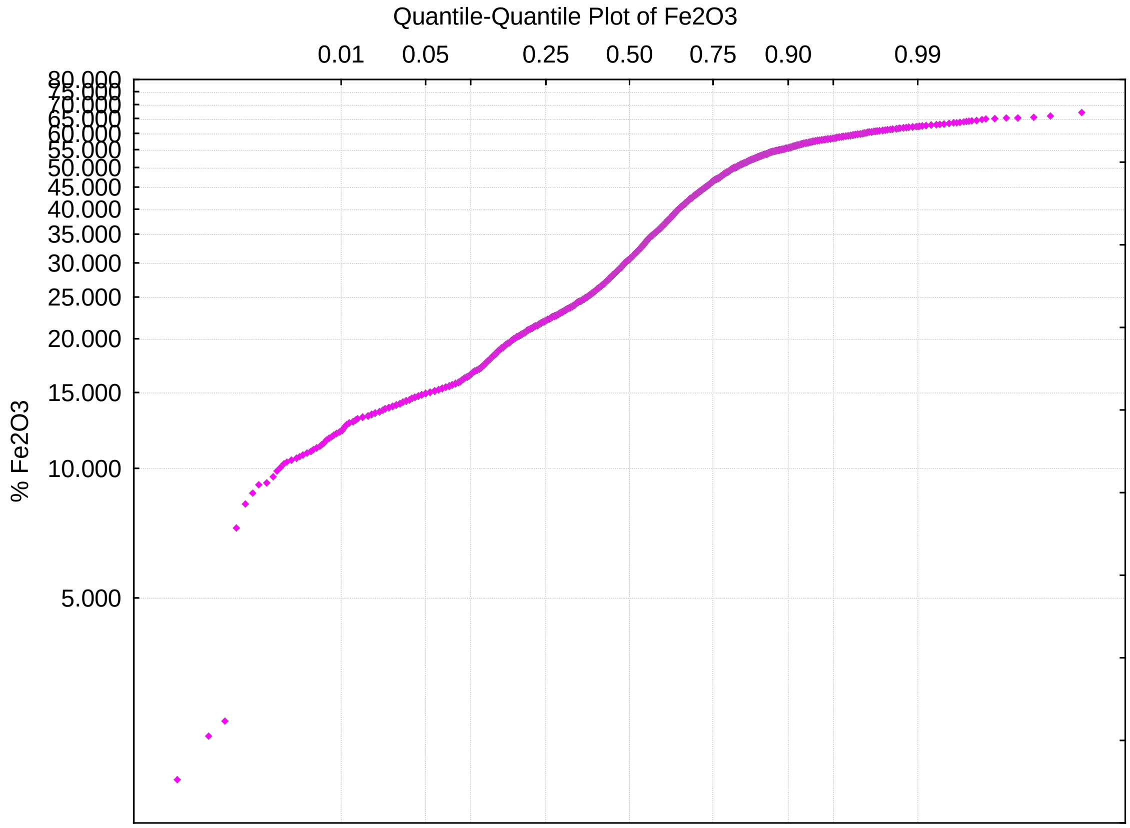
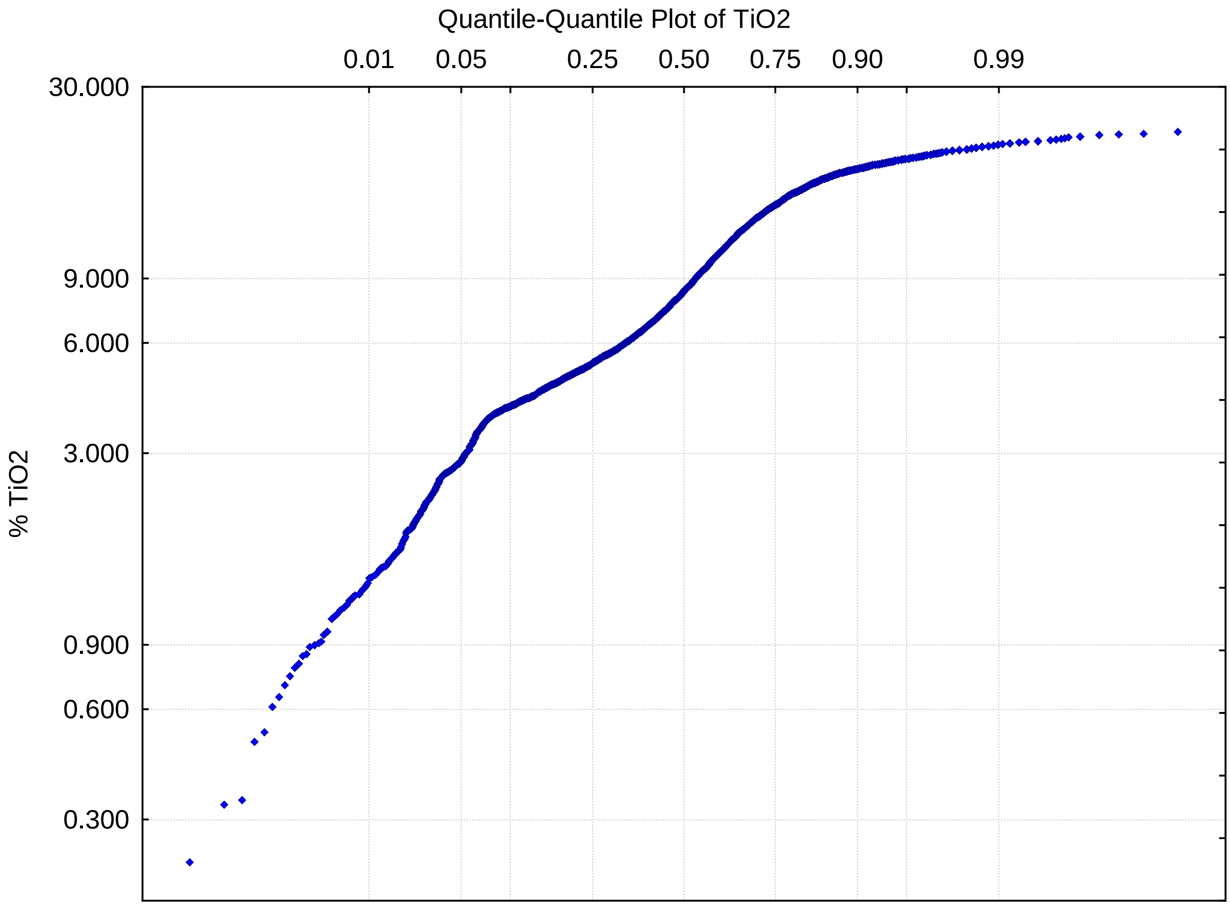


**Figure 11.4 QQ Plot of $TiO_2$**



## 12.0 DATA VERIFICATION

MDA has visited the Titan property. MDA reviewed all the project data generated to date, including drill logs and several of the assay certificates. MDA found no errors within the database compared to the assay certificates. MDA also examined drill core and can state that geological and mineralogical data documented and presented by Randsburg was found in the core and surface exposures. MDA found that in general, the geologic documentation and interpretation fairly represent the Titan deposit.

MDA has reviewed and checked original assays, QA/QC procedures and results, and the digital assay files, examined geologic data and interpretations. Check assaying is limited to one composite used for metallurgical testing. MDA believes that check assaying procedures need to be developed for the project. In addition, the surface locations of the drill holes need to be surveyed by an accurate (± 1 cm) gps reciever or transit. For these reasons, only inferred resources can be calculated for the deposit.

### 12.1 Site Visit

A site visit was conducted on October 13th 2017 by the second author (Mr. Neil Pettigrew).

The Property was accessed via the Rabbit Lake road (17 kilometers) off Highway 11 then via a network of old logging roads (15 kilometers) by 4x4 truck followed by a hike on foot via old drill trails (7.5 kilometers). The property is crisscrossed by a network of old drill trails and several overgrown drill pads were observed. Only one BQ vertical casing (NAD83 Zone 17 UTM Co. 614,949E, 5,190,206N) was found and it appears that majority of the casings were pulled. An old exploration camp consisting of a plywood cabin and outbuildings in various states of decay were observed (NAD Zone 17 UTM Co. 614,987E, 5,190,288N). No exploration activity since the Randsburg drill programs was observed. Several magnetite mineralized outcrops were observed consisting of gabbroic rocks with highly deformed bands of massive magnetite. A total of 2 samples were collected from these outcrops for analysis the result of which are tabulated in Table 12.1, assay certificates are located in Appendix B.

**Table 12.1 Check Samples Collected From Outcrop on the Titan Property**

| Sample No. | Easting | Northing | $Fe_2O_3$ wt% | $TiO_2$ wt% | $V_2O_5$ wt% |
|---|---|---|---|---|---|
| NP-Ti-17-006 | 614,907 | 5,190,299 | 56.12 | 18.62 | 0.528 |
| NP-Ti-17-007 | 614,976 | 5,190,113 | 34.57 | 9.19 | 0.265 |

Mr. Neil Pettigrew also visited and sampled the Randsburg drill core which is currently stored at the Temagami First Nations storage yard located ~6km south of the town of Temagami on Highway 11 (NAD 83 Zone 17 TUM Coordinates 590,364E, 5,207,958N). The drill core is currently stored outside on pallets and held together with steel strapping. The core has been out in the weather for ~10 years and several of the steel straps have let go resulting in some spillage of the core. The upper boxes on the pallets have also started to rot, however, the majority of the core is intact. Further complicating matters is the fact that the core is not in order and only half of the boxes have metal tags the rest have magic marker labels which have faded. However, the sample tags which were inserted at the end of each sample are in good shape. Therefore, with some effort the core can be put back in order, metal tags placed on the boxes, and placed in racks with roofs which would greatly extend the life of the drill core boxes. A total of 5 samples were collected consisting of the remaining half of the split drill core. The check sample results with corresponding Randsburg assays are tabulated in Table 12.2. Check sample assay certificates are located in Appendix B.

**Table 12.2 Check Sample Collected From Ransburg Diamond Drill Core.**

| Hole No. | From | To | Randsburg Sample No. | $Fe_2O_3$ wt% | $TiO_2$ wt% | V wt% | Pettigrew Sample No. | $Fe_2O_3$ wt% | $TiO_2$ wt% | V wt% | $V_2O_5$ wt% |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RA-05-05 | 117m | 119m | B058003 | 38.1 | 10.85 | 0.18 | NP-Ti-17-001 | 39.57 | 11.65 | 0.19 | 0.343 |
| RA-05-13 | 44m | 45m | B059858 | 20.1 | 4.64 | 0.05 | NP-Ti-17-002 | 20.66 | 4.84 | 0.04 | 0.079 |
| RA-05-14 | 529m | 531m | B422793 | 55.4 | 17.85 | 0.26 | NP-Ti-17-003 | 55.61 | 18.56 | 0.29 | 0.509 |
| RA-05-04 | 156m | 158m | B046375 | 33.7 | 9.76 | 0.14 | NP-Ti-17-004 | 38.64 | 11.8 | 0.21 | 0.375 |
| RA-05-21 | 33m | 35m | B059448 | 55.9 | 18.55 | 0.32 | NP-Ti-17-005 | 60.63 | 20.32 | 0.34 | 0.61 |

All check samples were shipped via Manitoulin Transport to Activation Laboratories Ltd. facility in Timmins Ontario for analysis. Samples were analyzed by roasting (loss on ignition (LOI) followed by fusion in a platinum crucible with lithium metaborate and lithium teraborate which were then analyzed on a Panalytical Axios Advanced wavelength dispersive XRF. Detection limits for $Fe_2O_3$ were 0.01 wt%, $TiO_2$ 0.01 wt%, and $V_2O_5$ 0.003 wt%.

In MDA's opinion, the drill hole data is suitable to be used in an inferred resource estimate. If a more accurate survey is completed of drill hole locations, with more definitive metallurgical testing, MDA believes that the data is suitable to estimate higher resource categories.

# 13.0 MINERAL PROCESSING AND METALLURGICAL TESTING

## 13.1 Randsburg Metallurgical Testing

Preliminary metallurgical tests have been completed on mineralized samples from hole RA-04-06. These samples were shipped to Altairnano for testing with a proprietary hydrochloride pigment process. Table 13.1 summarizes the two sample composites used for the testwork.

**Table 13.1 Altairnano Metallurgical Test Composites**

| Hole | Sample | From | To | Weight (kg) | % $Fe_2O_3$ | % Fe | % $TiO_2$ | % V |
|---|---|---|---|---|---|---|---|---|
| RA-04-06 | B045638 | 155.85 | 157.85 | 3.41 | 57.20 | 40.00 | 18.00 | 0.30 |
| RA-04-06 | B045639 | 157.85 | 159.85 | 4.02 | 55.70 | 39.00 | 17.30 | 0.31 |
| RA-04-06 | B045640 | 159.85 | 161.85 | 3.68 | 56.10 | 39.20 | 17.20 | 0.29 |
| RA-04-06 | B045641 | 161.85 | 163.85 | 3.77 | 58.70 | 41.00 | 17.95 | 0.30 |
| RA-04-06 | B045642 | 163.85 | 165.85 | 4.17 | 57.40 | 40.10 | 17.70 | 0.30 |
| RA-04-06 | B045643 | 165.85 | 167.85 | 4.21 | 58.50 | 40.90 | 18.05 | 0.30 |
| RA-04-06 | B045644 | 167.85 | 169.85 | 3.89 | 56.90 | 39.80 | 17.45 | 0.30 |
| RA-04-06 | B045645 | 169.85 | 171.85 | 4.05 | 58.80 | 41.10 | 18.00 | 0.31 |
| RA-04-06 | B045646 | 171.85 | 173.85 | 3.79 | 56.90 | 39.80 | 17.20 | 0.30 |
| **Composite 1** | | **155.85** | **173.85** | **34.99** | **57.37** | **40.11** | **17.65** | **0.30** |
| RA-04-06 | B045690 | 259.85 | 261.85 | 3.56 | 57.40 | 40.10 | 18.85 | 0.33 |
| RA-04-06 | B045691 | 261.85 | 263.85 | 3.81 | 54.30 | 38.00 | 18.45 | 0.28 |
| RA-04-06 | B045692 | 263.85 | 265.85 | 3.30 | 51.60 | 36.10 | 16.95 | 0.25 |
| RA-04-06 | B045693 | 265.85 | 267.85 | 3.51 | 53.80 | 37.60 | 17.60 | 0.28 |
| RA-04-06 | B045694 | 267.85 | 269.85 | 3.66 | 54.70 | 38.30 | 18.10 | 0.31 |
| RA-04-06 | B045695 | 269.85 | 271.85 | 3.55 | 55.60 | 38.90 | 18.00 | 0.31 |
| RA-04-06 | B045696 | 271.85 | 273.85 | 4.25 | 62.60 | 43.80 | 21.50 | 0.34 |
| RA-04-06 | B045697 | 273.85 | 275.85 | 4.36 | 58.50 | 40.90 | 19.95 | 0.22 |
| RA-04-06 | B045698 | 275.85 | 277.85 | 3.73 | 59.60 | 41.70 | 20.50 | 0.32 |
| RA-04-06 | B045699 | 277.85 | 279.85 | 4.02 | 56.80 | 39.70 | 19.05 | 0.32 |
| **Composite 2** | | **259.85** | **279.85** | **37.75** | **56.68** | **39.64** | **18.98** | **0.30** |

In addition, Altairnano indicated the average Niobium content of the composites to be about 0.1% Nb.

Altairnano investigated the core and concluded that the mineralization was mainly in the form of magnetite intergrown with ilmenite (60%), ilmenite (10%), and 30% non-titanium bearing gangue minerals. Based on Randsburg petrographic and microprobe studies, Altairnano estimated that 60% of the contained titanium was in the form of ilmenite and the remaining 40% contained in the magnetite. Altairnano completed an SEM-EDX examination and concluded that the intergrown magnetite/ilmenite mineralization may need to be crushed to less than 75 microns (200 mesh) for effective liberation of the minerals.

Altairnano completed a proprietary "Altair Hydrochloride Pigment Process" ("AHPP") dissolution test on the composites. This process uses hydrochloric acid and hydrochloride gas to dissolve iron, titanium and vanadium metals. The test concluded that 88% of the iron, 96% of the titanium and 80% of the vanadium could be dissolved after 4 hours using this process. The AHPP test only tested dissolution, so overall product recovery in saleable products is unknown using this process.

Altairnano suggested pre-treatment of the material in order to improve dissolution kinetics. Dry magnetic separation was tried with poor results. Altairnano then sent 5 kg of composite sample to Hazen Research in Golden, Colorado for wet magnetic testing. Hazen obtained a high-grade concentrate by wet magnetic separation but the overall recovery was poor. Hazen suggested additional testing using magnetic separation, gravity and flotation.

Altairnano concluded that additional testing is required at finer grind size in the 5-20-micron range.

## 13.2 Prophecy Metallurgical Testing

Hazen Research Inc was requested in 2011 to determine the mineralogical characterization of a vanadium-bearing ilmenite-magnetite sample from the Titan Deposit. Hazen concluded that in general, the study showed that the titanium occurs as distinct granular ilmenite particles usually intergrown with the magnetite, as a fine network of ilmenite and/or ulvöspinel lamellae in the magnetite matrix, and as an ultrafine (micron-sized) uniform admixture of magnetite with ulvöspinel, which has the appearance of homogeneous magnetite under the microscope. Ordinary titanium-free magnetite is evidently absent. Vanadium is associated with both the magnetite–ulvöspinel component and the discrete ilmenite.

The preliminary conclusion derived from the results is that an ilmenite concentrate could probably be produced by wet low-intensity magnetic separation. However, the strongly magnetic, i.e., magnetite, fraction will likely be high in titanium. This means that the recovery of titanium as ilmenite from the total titanium in the feed may be lower than normal.

MDA concludes that additional testwork is required to determine product recoveries and the costs to obtain the products to complete a preliminary economic assessment for the deposit, however, the testwork does indicate that recoveries in the range of other similar operating properties may be possible, however, titanium recovery may be lower than normal. The additional work should include both continued testing with the new and present conventional processing methods for iron, ilmenite, and vanadium deposits. The initial Altairnano testwork indicated good leaching recoveries.

# 14.0 MINERAL RESOURCE ESTIMATE

## 14.1 Specific Gravity

MDA collected three surface samples and three half-core samples from drill hole RA-04-06 (163.85 to 165.85). These samples were given to Kappes, Cassiday and Associates ("KCA") for density testing by coating the samples in wax and weighing the dry samples and determining the volume by water displacement (ASTM Method C914-95). KCA needed to break the pieces of core to fit the density testing apparatus. The results of the density tests are shown in Table 14.1

**Table 14.1 Density Testing of Mineralized Materials**

| KCA Sample No. | Received Weight, grams | Weight + Wax, grams | Weight in Water, grams | Density, grams /cm3 |
|---|---|---|---|---|
| 36113 A-Core | 355.18 | 360.29 | 272.71 | 4.34 |
| 36113 A-Core | 266.92 | 270.86 | 203.16 | 4.21 |
| 36113 A-Core | 218.16 | 221.06 | 167.59 | 4.34 |
| 36113 B-Core | 414.34 | 420.03 | 317.12 | 4.29 |
| 36113 B-Core | 305.09 | 308.97 | 233.99 | 4.32 |
| 36113 C-Core | 310.69 | 315.06 | 236.55 | 4.22 |
| 36113 C-Core | 376.10 | 381.44 | 288.27 | 4.31 |
| 36113 D-Sample | 1261.75 | 1276.93 | 966.29 | 4.29 |
| 36113 E-Sample | 263.76 | 267.07 | 201.14 | 4.24 |
| 36113 F-Sample | 133.42 | 135.33 | 102.58 | 4.35 |
| | | | Average: | 4.29 |

MDA believes that additional testing is warranted for both mineralized and non-mineralized materials. A relationship may be developed between density and iron content.

## 14.2 Resource Estimate

Only inferred resources can be calculated for the project since there has been limited check assaying and the drill hole survey has only been completed by a hand held GPS system. Similar Vanadium-Iron-Titanium deposits have recently gone into production in Brazil and Australia. A number of other deposits are in the early exploration and preliminary economic assessment stage. Metallurgical processes have been developed to recover metals from these deposits, based on magnetic separation and leaching to produce iron and titanium concentrates and vanadium pentoxide, or roasting concentrates to produce ferro-vanadinite.

To complete the mineralized deposit shape, MDA plotted east/west cross sections on 50 m intervals with iron and titanium values with geology plotted on one side. The geologic unit logged as magnetite olivine gabbro contained most of the material in the highest-grade population, or above 40% $Fe_2O_3$ and 12% $TiO_2$. Mineralized zones were drawn on the cross sections using an approximate 40% $Fe_2O_3$ cutoff grade. A typical cross section is shown in Figure 14.1.

The mineralized zones were digitized and assay intervals within the mineralized zones were coded. Basic statistics are shown in Table 14.2 for materials inside and outside the mineralized zones.

# Figure 14.1 Typical Cross Section

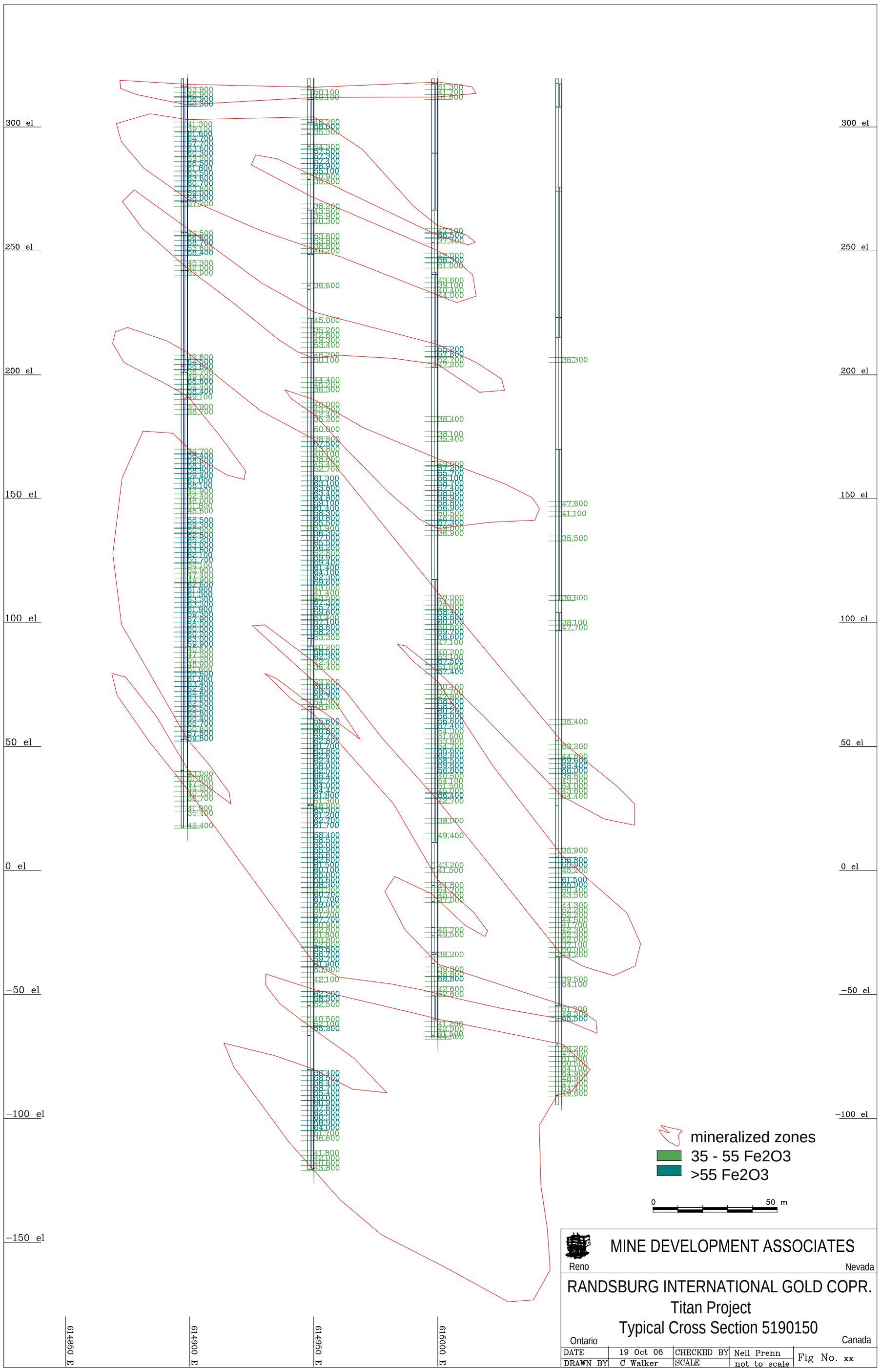


**Table 14.2 Statistics of Materials Inside and Outside the Mineralized Zones**

| Zone | Item | Valid N | Mean | Minimum | Maximum | Std.Dev. | C.V. |
|---|---|---|---|---|---|---|---|
| Mineralized | $Fe_2O_3$ | 1968 | 48.26 | 12.00 | 67.70 | 9.54 | 0.20 |
| Mineralized | $TiO_2$ | 1968 | 14.96 | 0.90 | 22.80 | 3.80 | 0.25 |
| Mineralized | V | 1811 | 0.24 | 0.01 | 0.52 | 0.06 | 0.26 |
| | | | | | | | |
| Non-Mineralized | $Fe_2O_3$ | 2929 | 24.94 | 1.90 | 57.40 | 8.15 | 0.33 |
| Non-Mineralized | $TiO_2$ | 2929 | 6.43 | 0.23 | 19.65 | 2.91 | 0.45 |
| Non-Mineralized | V | 2772 | 0.09 | 0.00 | 0.32 | 0.05 | 0.58 |

QQ plots of assays within the mineralized zone are shown in Figure 14.2 and Figure 14.3 for $Fe_2O_3$ and $TiO_2$ respectively. These plots indicate that for more detailed grade modeling two mineralized zones might be considered for both $Fe_2O_3$ (above and below 52%) and $TiO_2$ (above and below 15%).

**Figure 14.2 QQ Plot of $Fe_2O_3$ Grades Inside Mineralized Zones**

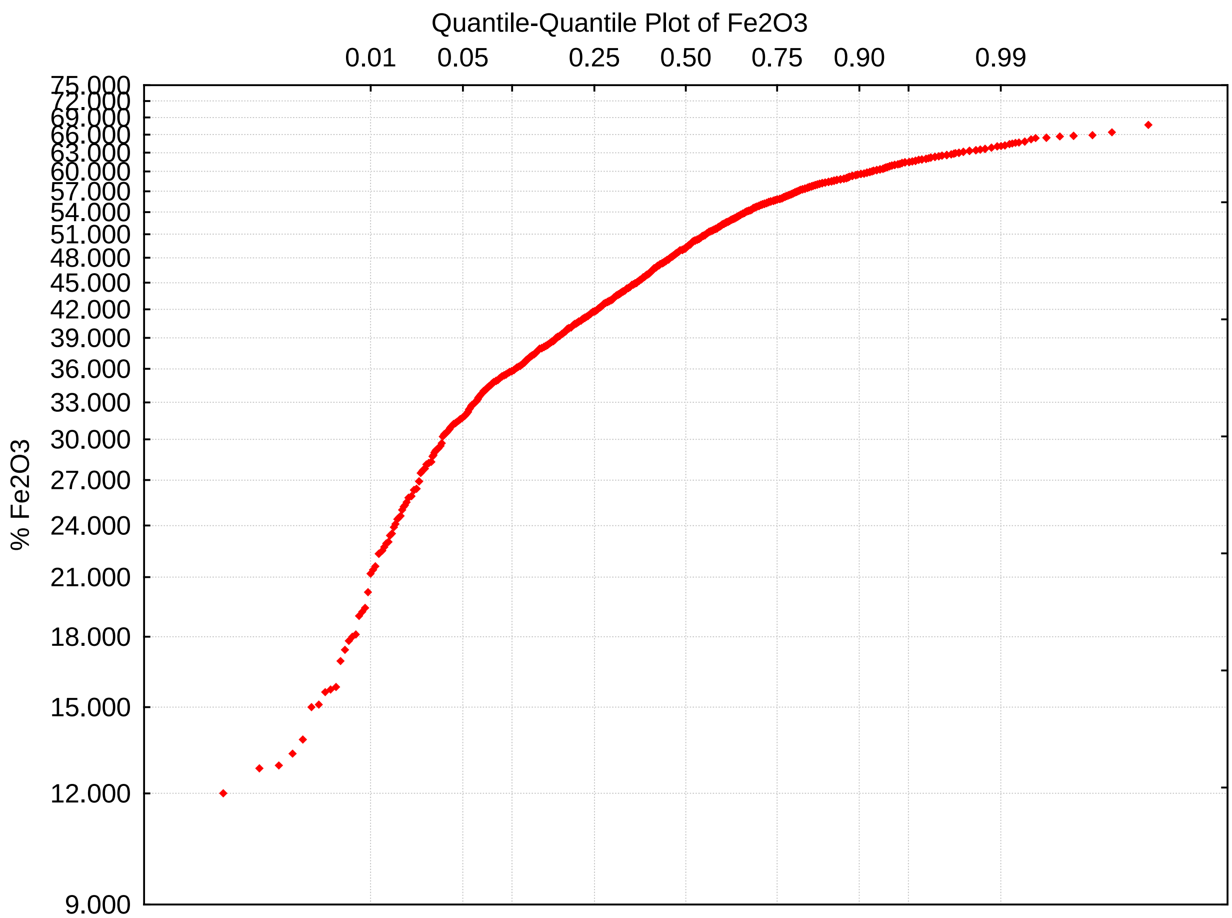
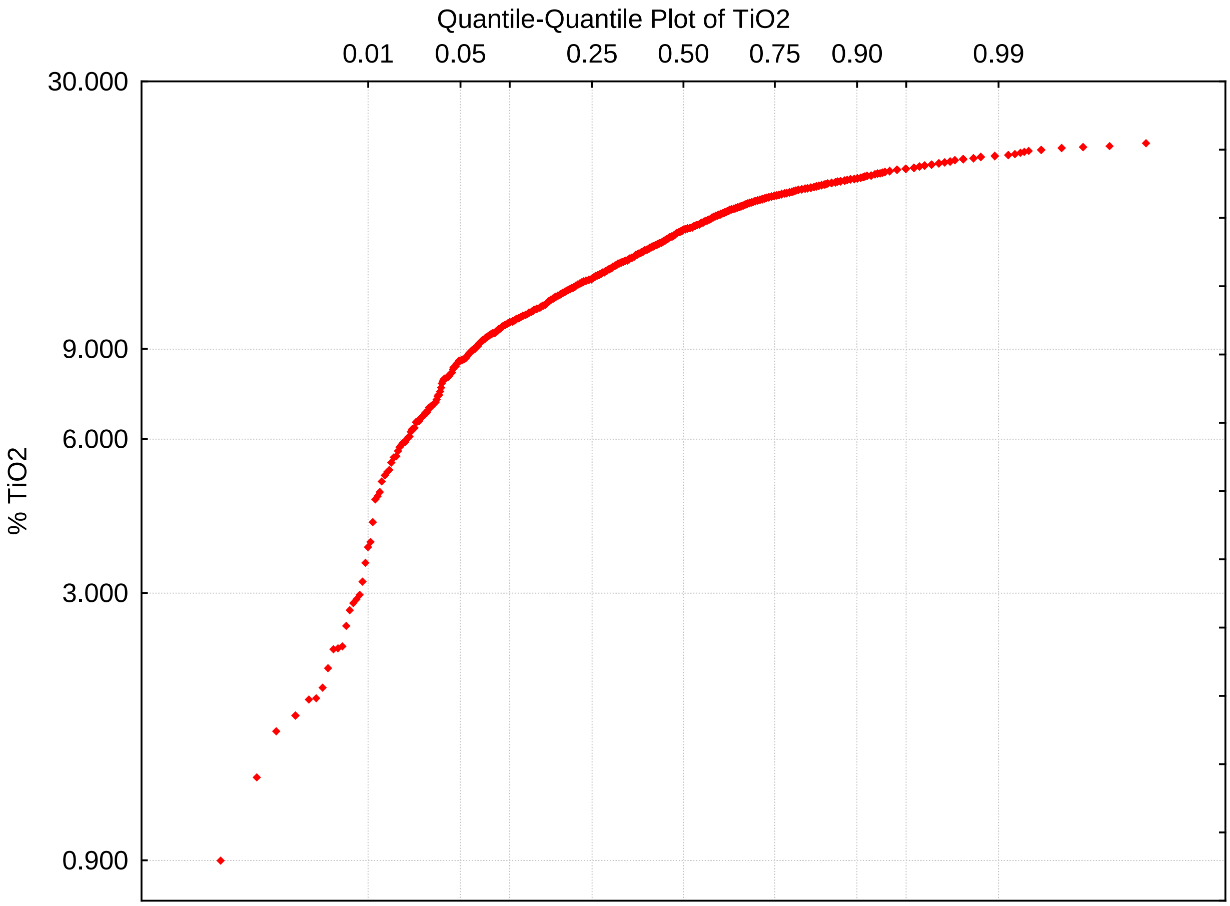
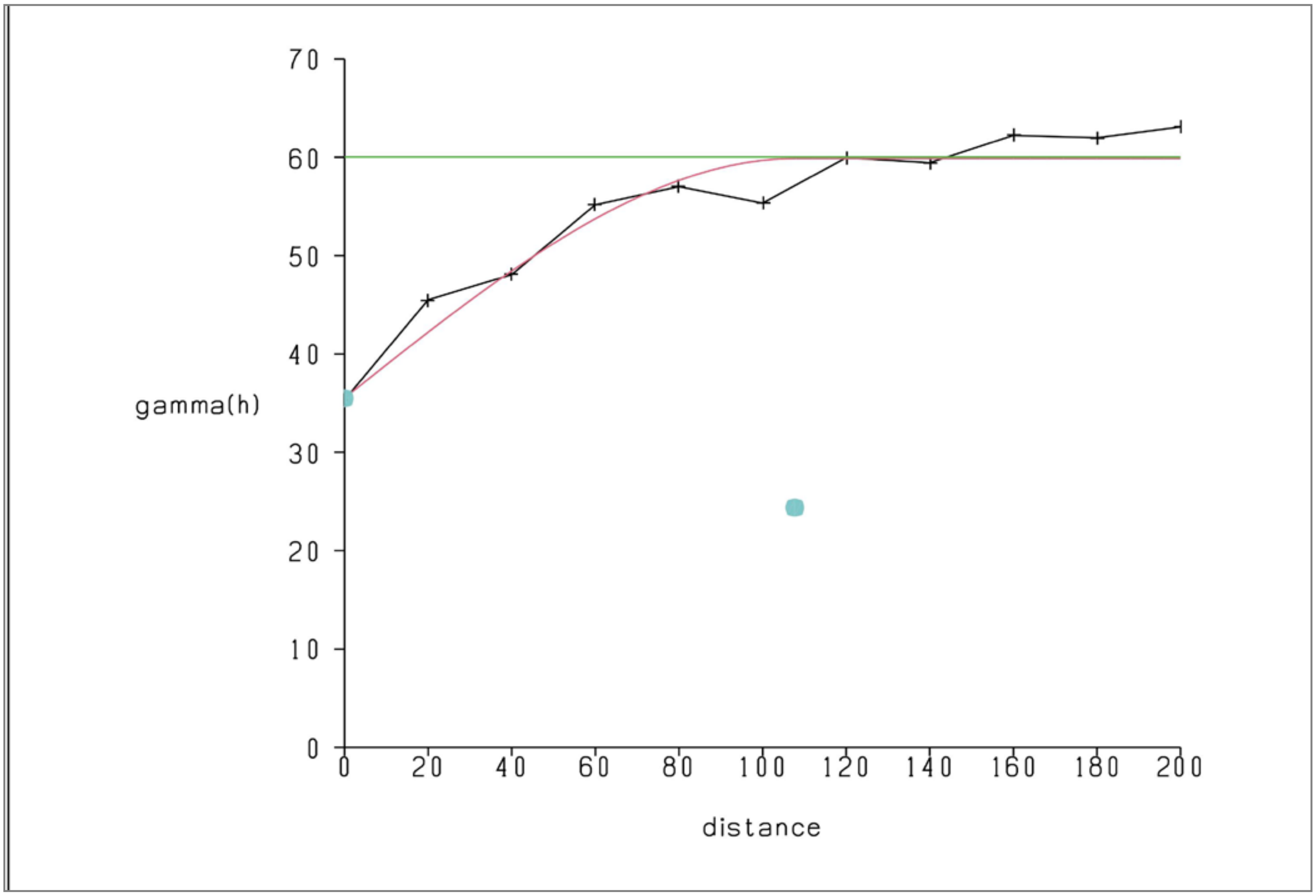


**Figure 14.3 QQ Plot of $TiO_2$ Grades Inside Mineralized Zones**




Omni-directional variograms were modeled for the deposit. The variogram for $Fe_2O_3$ indicated a range of about 108 meters as shown in Figure 14.4.

**Figure 14.4 Omni-directional $Fe_2O_3$ variogram**




Grades for $Fe_2O_3$, $TiO_2$, and V were interpolated by ordinary kriging into 5 x 5 x 10 m blocks from 10 m composites from mineralized zones. These kriged block grades were compared to grades estimated by inverse distance methods and were essentially the same globally. A minimum of one composite and a maximum of nine composites were used to interpolate grades. Since the economics and recoveries of the different materials contained in the mineralized zone have not been defined, all of the material estimated within the high-grade mineralization boundary (approximately a 40% $Fe_2O_3$ cutoff grade) and within the variogram range of 108 m from a composite has been defined as an inferred resource. A summary of mineralization above a 40% $Fe_2O_3$ cutoff grade is shown in Table 14.3.

## Table 14.3 Titan Summary of Mineralized Material

| Elevation | Tonnes (000"s) | % $Fe_2O_3$ | % $TiO_2$ | % V |
|---|---|---|---|---|
| -220 | 17.7 | 53.50 | 17.00 | 0.26 |
| -210 | 53.6 | 54.10 | 17.21 | 0.26 |
| -200 | 64.9 | 51.50 | 16.25 | 0.25 |
| -190 | 89.0 | 46.50 | 14.46 | 0.23 |
| -180 | 146.4 | 46.45 | 14.49 | 0.23 |
| -170 | 216.1 | 45.89 | 14.23 | 0.23 |
| -160 | 277.2 | 45.88 | 14.11 | 0.22 |
| -150 | 350.2 | 46.13 | 14.25 | 0.23 |
| -140 | 423.6 | 45.97 | 14.21 | 0.23 |
| -130 | 479.9 | 44.91 | 13.78 | 0.22 |
| -120 | 534.6 | 43.24 | 13.19 | 0.22 |
| -110 | 564.1 | 44.67 | 13.82 | 0.22 |
| -100 | 566.3 | 47.54 | 14.84 | 0.24 |
| -90 | 557.7 | 48.39 | 15.05 | 0.24 |
| -80 | 544.3 | 48.31 | 14.86 | 0.23 |
| -70 | 508.4 | 48.17 | 14.77 | 0.24 |
| -60 | 499.2 | 48.49 | 15.00 | 0.24 |
| -50 | 536.3 | 48.85 | 15.25 | 0.24 |
| -40 | 575.4 | 49.36 | 15.47 | 0.25 |
| -30 | 632.8 | 50.20 | 15.79 | 0.25 |
| -20 | 623.7 | 51.00 | 16.18 | 0.25 |
| -10 | 570.0 | 52.40 | 16.89 | 0.26 |
| 0 | 563.6 | 52.80 | 17.09 | 0.26 |
| 10 | 638.7 | 51.24 | 16.37 | 0.25 |
| 20 | 840.3 | 50.80 | 16.06 | 0.25 |
| 30 | 1,004.4 | 49.86 | 15.53 | 0.25 |
| 40 | 1,147.6 | 48.47 | 14.84 | 0.23 |
| 50 | 1,279.5 | 47.80 | 14.48 | 0.23 |
| 60 | 1,346.5 | 48.16 | 14.66 | 0.24 |
| 70 | 1,366.9 | 48.57 | 14.90 | 0.24 |
| 80 | 1,357.2 | 48.75 | 15.00 | 0.25 |
| 90 | 1,392.1 | 50.34 | 15.67 | 0.26 |
| 100 | 1,429.1 | 50.53 | 15.68 | 0.26 |
| 110 | 1,415.2 | 50.07 | 15.44 | 0.25 |
| 120 | 1,422.7 | 49.61 | 15.31 | 0.25 |
| 130 | 1,485.9 | 47.04 | 14.27 | 0.23 |
| 140 | 1,484.3 | 46.40 | 13.93 | 0.22 |
| 150 | 1,366.4 | 47.49 | 14.41 | 0.24 |
| 160 | 1,219.4 | 48.18 | 14.71 | 0.24 |
| 170 | 1,090.7 | 49.24 | 15.09 | 0.25 |
| 180 | 1,038.2 | 49.62 | 15.29 | 0.25 |
| 190 | 1,163.1 | 49.03 | 15.08 | 0.25 |
| 200 | 1,361.0 | 47.83 | 14.63 | 0.24 |
| 210 | 1,341.7 | 47.13 | 14.42 | 0.23 |
| 220 | 1,221.6 | 47.22 | 14.47 | 0.23 |
| 230 | 1,297.7 | 47.00 | 14.37 | 0.23 |
| 240 | 1,434.5 | 46.72 | 14.22 | 0.23 |
| 250 | 1,483.8 | 46.98 | 14.37 | 0.23 |
| 260 | 1,550.3 | 47.26 | 14.52 | 0.23 |
| 270 | 1,391.6 | 47.76 | 14.78 | 0.24 |
| 280 | 1,351.9 | 46.89 | 14.44 | 0.23 |
| 290 | 1,577.6 | 45.83 | 13.96 | 0.23 |
| 300 | 1,450.0 | 46.18 | 14.11 | 0.23 |
| 310 | 638.1 | 46.42 | 14.16 | 0.24 |
| **Totals** | **48,983.2** | **48.09** | **14.82** | **0.24** |

An equivalent vanadium recovered value was calculated and was used to optimize a pit. The commodity prices and recoveries used to determine the material inside an optimized pit is shown in Table 14.4.

**Table 14.4 Equivalent Vanadium Calculation**

| Material | Price $/metric unit* | Basis | Concentrate Grade | Recovery | Recovered Value | Equivalent V |
|---|---|---|---|---|---|---|
| V | $176.37 | $ 8/lb V | | 75.0% | $132.28 | 1 |
| FeO2 | $1.56 | $100/t Fe2O3 | 64% Fe2O3 | 65.0% | $1.02 | 0.0077 |
| TiO2 | $3.70 | $200/t tiO2 | 54% TiO2 | 65.0% | $2.41 | 0.0182 |

Note: 1 % of a metric tonne is 22.046 lbs

The following parameters were used to determine material inside an optimized pit:

- 40% Fe2O3 Cutoff Grade
- 50 degree pit slope
- Material processed density 4.29 tonnes/cu meter; Waste density 3.00 tonnes/cu meter
- Mining cost $2.10 per tonne mined
- Processing cost $50 per tonne processed
- G & A cost $2.00 per tonne processed
- Price of $8/lb vanadium recovered

Based on the parameters used for pit optimization, the pits shown in Table 14.5 were obtained.

**Table 14.5 Pit Optimization Results**

| Pit | Vanadium Price $/lb | Total Tonnes 000's | Waste Tonnes 000's | "Ore" Tonnes 000's | Strip Ratio t waste/t ore | Max Bench | Min Bench | FE2O Units 000's | FE2O Grade % | TIO2 Units 000's | TIO2 Grade % | V Units 000's | V Grade % | EQ V Grade % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | $3.68 | 1,407.4 | 497.9 | 909.5 | 0.55 | 58 | 52 | 46,767.7 | 51.42 | 14,791.3 | 16.26 | 221.0 | 0.24 | 0.92 |
| 3 | $4.00 | 25,074.1 | 12,015.4 | 13,058.8 | 0.92 | 59 | 38 | 634,503.0 | 48.59 | 195,576.1 | 14.98 | 3,151.3 | 0.24 | 0.88 |
| 4 | $4.16 | 50,571.9 | 29,412.6 | 21,159.4 | 1.39 | 59 | 33 | 1,027,174.5 | 48.55 | 316,240.7 | 14.95 | 5,117.1 | 0.24 | 0.88 |
| 6 | $4.48 | 70,631.6 | 44,211.6 | 26,420.0 | 1.67 | 59 | 29 | 1,273,862.3 | 48.22 | 391,729.2 | 14.83 | 6,333.5 | 0.24 | 0.87 |
| 9 | $4.96 | 159,652.8 | 120,777.9 | 38,874.9 | 3.11 | 59 | 20 | 1,874,513.0 | 48.22 | 576,634.9 | 14.83 | 9,305.1 | 0.24 | 0.87 |
| 13 | $5.60 | 209,237.5 | 166,294.6 | 42,942.9 | 3.87 | 59 | 14 | 2,075,481.5 | 48.33 | 639,146.0 | 14.88 | 10,305.7 | 0.24 | 0.87 |
| 16 | $6.08 | 227,140.4 | 183,036.0 | 44,104.4 | 4.15 | 59 | 13 | 2,132,120.8 | 48.34 | 656,624.0 | 14.89 | 10,590.2 | 0.24 | 0.87 |
| 22 | $7.04 | 241,787.9 | 196,957.4 | 44,830.5 | 4.39 | 59 | 12 | 2,167,062.0 | 48.34 | 667,400.0 | 14.89 | 10,765.8 | 0.24 | 0.87 |
| **28** | **$8.00** | **272,111.5** | **226,115.2** | **45,996.3** | **4.92** | **59** | **10** | **2,222,403.9** | **48.32** | **684,589.1** | **14.88** | **11,042.1** | **0.24** | 0.87 |
| 34 | $9.12 | 299,812.2 | 252,898.9 | 46,913.3 | 5.39 | 59 | 9 | 2,264,066.5 | 48.26 | 697,416.6 | 14.87 | 11,251.2 | 0.24 | 0.87 |
| 40 | $10.08 | 320,630.0 | 273,125.8 | 47,504.2 | 5.75 | 59 | 8 | 2,290,447.5 | 48.22 | 705,478.7 | 14.85 | 11,383.7 | 0.24 | 0.87 |
| 51 | $12.00 | 353,443.6 | 305,162.8 | 48,280.7 | 6.32 | 59 | 7 | 2,324,216.6 | 48.14 | 715,739.5 | 14.83 | 11,549.8 | 0.24 | 0.87 |
| 64 | $16.00 | 370,453.4 | 321,879.9 | 48,573.5 | 6.63 | 59 | 7 | 2,337,066.8 | 48.11 | 719,648.5 | 14.82 | 11,612.7 | 0.24 | 0.87 |

The deposit resources based on the grade model at a 40% $Fe_2O_3$ cutoff grade and the results of pit optimization based on the parameters shown above is tabulated in Table 14.6. MDA is not aware of any environmental, permitting, legal title, or other relevant factors that could material effect the resource estimate.

**Table 14.6 Titan Resource Summary**

| Tonnes 000's | % $Fe_2O_3$ | % $TiO_2$ | % V |
|---|---|---|---|
| 45,996.3 | 48.32 | 14.88 | 0.24 |

# 15.0 MINERAL RESERVES

# 16.0 MINING METHODS

# 17.0 RECOVERY METHODS

# 18.0 PROJECT INFRASTUCTURE

# 19.0 MARKET STUDIES AND CONTRACTS

# 20.0 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

# 21.0 CAPITAL AND OPERATING COSTS

# 22.0 ECONOMIC ANALYSIS

Sections 15 through 22 are for advanced properties and do not apply to the Titan Deposit. There are no Mineral Reserves for the Titan Deposit, and an economic study has not been completed for the property.

# 23.0 ADJACENT PROPERTIES

MDA is not aware of any pertinent information about adjacent properties.

# 24.0 OTHER RELEVANT DATA AND INFORMATION

MDA is not aware of other relevant data and information on the property.

## 25.0 INTERPRETATION AND CONCLUSIONS

The deposit occurs in a relatively wet and remote area located north of North Bay, Ontario. The access to the deposit is better during winter months when the ground is frozen. The deposit is open in several directions; however, wet conditions limit drilling in most of the open areas to winter months.

A total of 38 diamond drill holes have defined an inferred resource of 46.0 million tonnes of material grading 48.32% $Fe_2O_3$, 14.88%$TiO_2$, and 0.24%V contained in an optimized pit. Only inferred resources can be calculated for the project since the drill holes have not been properly surveyed and the recovery of saleable products and economics of the project have not been defined. In addition, additional density testing should be completed. The 50-meter grid pattern used for drilling the deposit appears to be adequate to define the mineralization.

The most important items to complete are a metallurgical testing program, obtain product recoveries and complete a market study to determine where the potential product markets are.

# 26.0 RECOMMENDATIONS

The Titan project contains significant iron, titanium, and vanadium mineralization. MDA believes that the next phase of work should concentrate on the metallurgy of the deposit. Testing utilizing both Altairnano's technology and conventional technology should be completed. The metallurgical program should be designed by an independent metallurgist after reviewing the data. The drill holes and project area should be surveyed to obtain more accurate drill hole coordinates and site topography. A surface geologic map should be completed utilizing methods to clear the soil and till to expose the surface geology where required. Additional surface drilling should be completed in open areas. The magnetometer survey should be extended to the northeast over Cribbage Lake and beyond to the north east. The potential to upgrade the deposit area infrastructure needs to be investigated. Any environmental or land restriction to development need to be identified. This work should lead to a preliminary assessment of the project.

The following tasks to complete the assessment are estimated and recommended:

| | |
|---|---|
| ▪ Metallurgist Review: | $ 20,000 |
| ▪ Metallurgical Testing | $ 150,000 |
| ▪ Market Study | $ 15,000 |
| ▪ Magnetometer Survey | $ 30,000 |
| ▪ Drill Hole and Topographic Survey | $ 30,000 |
| ▪ Surface Geologic Mapping | $ 45,000 |
| ▪ Surface Drilling | $ 750,000 |
| ▪ Preliminary Assessment | $ 60,000 |
| ▪ **Totals** | **$ 1,100,000** |

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## 28.0 CERTIFICATE OF AUTHOR

**CERTIFICATE OF QUALIFIED PERSON**
**NEIL B. PRENN, P. E.**

a) I, Neil B. Prenn, P.Eng., do hereby certify that I am currently employed as Principal Engineer at Mine Development Associates, whose address is 210 S. Rock Blvd., Reno, NV 89502.

b) I am an author of this technical report, titled "***Technical Report, Titan Project, Ontario, Canada***" prepared for Prophecy Development Corp. with an effective date of **October 23, 2017.**

c) That I am a graduate of the Colorado School of Mines with an Engineer of Mines Degree granted in 1967. I am a Registered Professional Engineer in the State of Nevada (#7844). I am a Member of SME and MMSA.

I have worked as a Mining Engineer for more than 50 years, providing mine designs, reserve estimates and economic analyses for dozens of base- and precious-metals deposits and industrial minerals deposits in the United States and various countries of the world. I have had extensive experience in the calculation of resources during the past 30 years as president of Mine Development Associates, and have been responsible for the calculation of titanium resources. The most recent was for the Titanium Resources Group for the re-start of the Sierra Rutile mine, which historically supplied about 25% of the world's rutile. I have worked in layered mafic intrusions at the Lac Des Iles mine near Thunder Bay, Ontario

I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101

d) I visited the Titan project most recently on September 28, 2006.

e) I take responsibility for *all* sections of this report, subject to those issues discussed in Section 3, and sections 7 and 8 which were prepared by Neil Pettigrew, P. Geo.

f) I am independent of Prophecy Development Corp. and all their subsidiaries as defined in Section 1.5 of NI 43-101.

g) I have had prior involvement with the property and project since 2006 as an independent consultant. I am responsible for the preparation of the technical report titled Technical Report, Titan Project, Ontario Canada dated November 7, 2006 (the "Technical Report") and revised on February 12, 2007, and on February 26, 2010.

h) I have read National Instrument 43-101 and those portions of this report for which I am responsible has been prepared in compliance with that Instrument.

i) As of the effective date of the technical report, to the best my knowledge, information, and belief, the technical report, or part that I am responsible for, contains all the scientific and technical information that is required to be disclosed to make the technical report not misleading.

**SIGNATURE ON NEXT PAGE**

Dated the 23 day of October, 2017


Neil B. Prenn, P.E.

## CERTIFICATE OF QUALIFIED PERSON
### NEIL T. PETTIGREW, M.SC., P.GEO.

I, Neil Pettigrew, M.Sc., P. Geo., do hereby certify that I am currently employed as Vice President of Fladgate Exploration Consulting Corporation, located at 1158 Russell St. Unit D. Thunder Bay, Ontario, P7B 3J5.

b) I am an author of this technical report, titled "***Technical Report, Titan Project, Ontario, Canada***" prepared for Prophecy Development Corp. with an effective date of **October 23, 2017**.

c) I am a member in good standing of the Association of Professional Geoscientists of Ontario (APGO #1462). I am a graduate of the University of New Brunswick (B.Sc.) and the University of Ottawa (M.Sc.). I have practiced geology for 17 years in a variety of settings, mostly in Ontario, Canada. My experience includes the design and implementation of grassroots to advanced exploration programs in gold, PGEs, lithium, iron ore, and base metals. I have also served as an officer and a director of several public exploration companies on both the Toronto and TSX-Venture exchanges.

I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101

d) I visited the Titan project most recently on October 13th, 2017.

e) I take responsibility for sections 7, 8 and 12.1 of this report, subject to those issues discussed in Section 3.

f) I am independent of Prophecy Development Corp. and all their subsidiaries as defined in Section 1.5 of NI 43-101.

g) I have had no prior involvement with the property that is the subject of this report.

h) I have read National Instrument 43-101 and those portions of this report for which I am responsible has been prepared in compliance with that Instrument.

i) As of the effective date of the technical report, to the best my knowledge, information, and belief, the technical report, or part that I am responsible for, contains all the scientific and technical information that is required to be disclosed to make the technical report not misleading.

**SIGNATURE ON NEXT PAGE**

Dated the 23 day of October, 2017

***"Neil Pettigrew"   (signed by) / (sealed)***
Neil Pettigrew, M.Sc., P. Geo.

## APPENDIX A

### List of Patented and Unpatented Claims

**Patented Claims Located in Angus Township:**

| | | |
|---|---|---|
| T25433 (Patent 8818) | T25438 (Patent 8823) | T25479 (Patent 8828) |
| T25434 (Patent 8819) | T25439 (Patent 8824) | T25480 (Patent 8829) |
| T25435 (Patent 8820) | T25440 (Patent 8825) | T25481 (Patent 8830) |
| T25436 (Patent 8821) | T25477 (Patent 8826) | T25482 (Patent 8831) |
| T25437 (Patent 8822) | T25478 (Patent 8827) | T25483 (Patent 8832) |

**Patented Claims Located in Flett Township:**

| | |
|---|---|
| T25484 (Patent 8833) | T25485 (Patent 8834) |

# APPENDIX B

## Site Visit Check Sample Assay Certificates

*Quality Analysis ...* *Innovative Technologies*

| | |
|---|---|
| **Date Submitted:** | 18-Oct-17 |
| **Invoice No.:** | A17-11568 |
| **Invoice Date:** | 20-Oct-17 |
| **Your Reference:** | Titan |

**Fladgate Exploration**
**195 Park Avenue**
**Thunder Bay ON P7B 1B9**
**Canada**

**ATTN: Neil Pettigrew**

# CERTIFICATE OF ANALYSIS

**7 Rock samples were submitted for analysis.**

**The following analytical package(s) were requested:** **Code 8-Iron Ore Analysis XRF Fusion-XRF**

REPORT **A17-11568**

**This report may be reproduced without our consent. If only selected portions of the report are reproduced, permission must be obtained. If no instructions were given at time of sample submittal regarding excess material, it will be discarded within 90 days of this report. Our liability is limited solely to the analytical cost of these analyses. Test results are representative only of material submitted for analysis.**

**Notes:**

**CERTIFIED BY:**

**ACTIVATION LABORATORIES LTD.**
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TELEPHONE +905 648-9611 or +1.888.228.5227 FAX +1.905.648.9613
E-MAIL Ancaster@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

Results Activation Laboratories Ltd. Report: A17-11568

| Analyte Symbol | SiO2 | TiO2 | Al2O3 | Fe2O3(T) | MnO | MgO | CaO | Na2O | K2O | P2O5 | Cr2O3 | LOI | V2O5 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unit Symbol | % | % | % | % | % | % | % | % | % | % | % | % | % | % |
| Lower Limit | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | | 0.003 | 0.01 |
| Method Code | FUS-XRF | FUS-XRF | FUS-XRF | FUS-XRF | FUS-XRF | FUS-XRF | FUS-XRF | FUS-XRF | FUS-XRF | FUS-XRF | FUS-XRF | FUS-XRF | FUS-XRF | FUS-XRF |
| NP-Ti-17-001 | 25.49 | 11.65 | 12.39 | 39.57 | 0.24 | 7.15 | 4.00 | 1.53 | 0.28 | 0.12 | < 0.01 | -1.98 | 0.343 | 100.8 |
| NP-Ti-17-002 | 41.92 | 4.84 | 15.99 | 20.66 | 0.20 | 5.41 | 6.76 | 3.31 | 1.08 | 0.66 | < 0.01 | -0.27 | 0.079 | 100.6 |
| NP-Ti-17-003 | 10.01 | 18.56 | 7.80 | 55.61 | 0.31 | 6.22 | 1.31 | 0.36 | 0.07 | 0.06 | < 0.01 | -0.67 | 0.509 | 100.2 |
| NP-Ti-17-004 | 25.49 | 11.80 | 12.41 | 38.64 | 0.22 | 7.15 | 3.82 | 1.29 | 0.33 | 0.12 | < 0.01 | -1.12 | 0.375 | 100.5 |
| NP-Ti-17-005 | 6.45 | 20.32 | 6.45 | 60.63 | 0.33 | 5.64 | 0.67 | 0.20 | 0.04 | 0.03 | < 0.01 | -1.46 | 0.610 | 99.91 |
| NP-Ti-17-006 | 9.56 | 18.62 | 7.26 | 56.12 | 0.21 | 6.10 | 0.85 | 0.32 | 0.02 | 0.02 | < 0.01 | -0.09 | 0.528 | 99.51 |
| NP-Ti-17-007 | 30.78 | 9.19 | 13.09 | 34.57 | 0.23 | 6.83 | 4.79 | 1.95 | 0.42 | 0.16 | < 0.01 | -1.47 | 0.265 | 100.8 |

| Analyte Symbol | SiO2 | TiO2 | Al2O3 | Fe2O3(T) | MnO | MgO | CaO | Na2O | K2O | P2O5 | Cr2O3 | LOI | V2O5 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unit Symbol | % | % | % | % | % | % | % | % | % | % | % | % | % | % |
| Lower Limit | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | | 0.003 | 0.01 |
| Method Code | FUS-XRF | FUS-XRF | FUS-XRF | FUS-XRF | FUS-XRF | FUS-XRF | FUS-XRF | FUS-XRF | FUS-XRF | FUS-XRF | FUS-XRF | FUS-XRF | FUS-XRF | FUS-XRF |
| BE-N Meas | 38.71 | 2.71 | 10.16 | 13.13 | 0.20 | 13.21 | 14.12 | 3.32 | 1.37 | 1.05 | 0.05 | | 0.040 | |
| BE-N Cert | 38.2 | 2.61 | 10.1 | 12.8 | 0.200 | 13.1 | 13.9 | 3.18 | 1.39 | 1.05 | 0.0500 | | 0.042 | |
| BIR-1a Meas | 48.05 | 0.99 | 15.57 | 11.71 | 0.17 | 9.80 | 13.45 | 1.79 | 0.03 | 0.03 | | | | |
| BIR-1a Cert | 47.96 | 0.96 | 15.50 | 11.30 | 0.175 | 9.700 | 13.30 | 1.82 | 0.030 | 0.021 | | | | |
| SCH-1 Meas | 8.26 | 0.05 | 1.00 | 85.81 | 1.00 | | | 0.04 | 0.03 | 0.12 | | | | |
| SCH-1 Cert | 8.09 | 0.052 | 0.962 | 86.84 | 1.003 | | | 0.026 | 0.031 | 0.124 | | | | |
| AMIS 0129 Meas | 9.61 | 22.73 | 2.61 | 62.46 | 0.33 | 2.01 | 0.82 | | | | | | 0.496 | |
| AMIS 0129 Cert | 9.57 | 22.94 | 2.75 | 62.31 | 0.36 | 2.07 | 0.80 | | | | | | 0.48 | |
| NCS DC19003a Meas | 3.87 | 12.83 | 4.36 | 74.27 | 0.33 | 3.16 | 1.06 | | | | | | 0.576 | |
| NCS DC19003a Cert | 3.96 | 12.96 | 4.40 | 75.45 | 0.364 | 3.17 | 1.05 | | | | | | 0.559 | |
| NP-Ti-17-006 Orig | 9.52 | 18.57 | 7.18 | 55.97 | 0.21 | 6.08 | 0.84 | 0.32 | 0.02 | 0.03 | < 0.01 | -0.07 | 0.527 | 99.20 |
| NP-Ti-17-006 Dup | 9.59 | 18.67 | 7.33 | 56.27 | 0.21 | 6.12 | 0.85 | 0.33 | 0.02 | 0.02 | < 0.01 | -0.12 | 0.528 | 99.82 |
| Method Blank | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | | < 0.003 | |